

Archives of **PHYSICAL MEDICINE and REHABILITATION**

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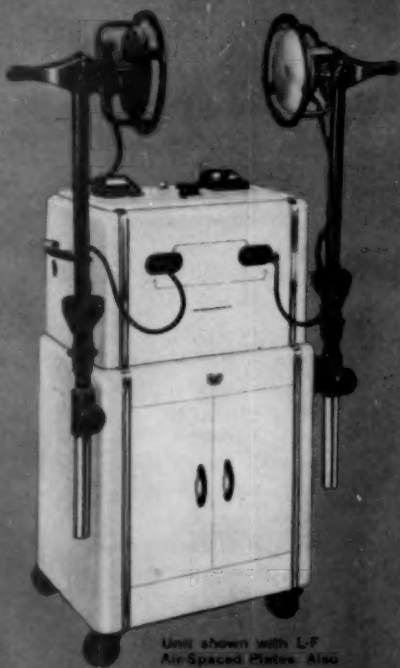
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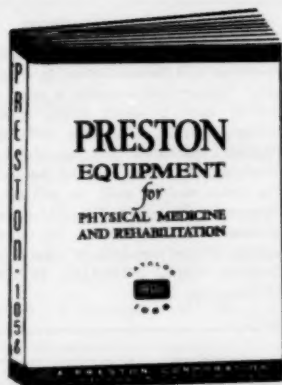
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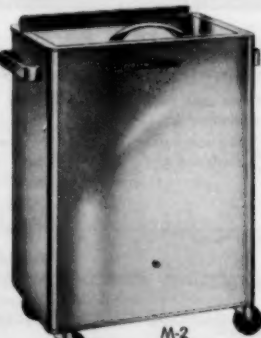


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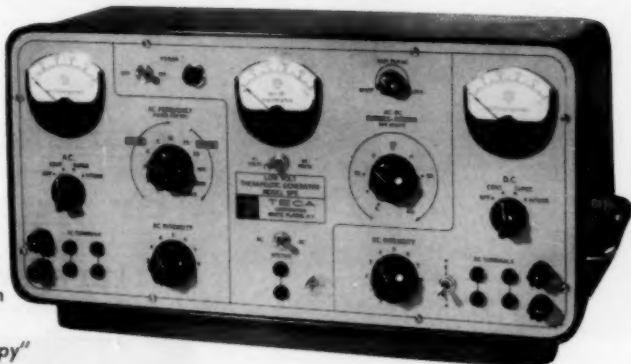
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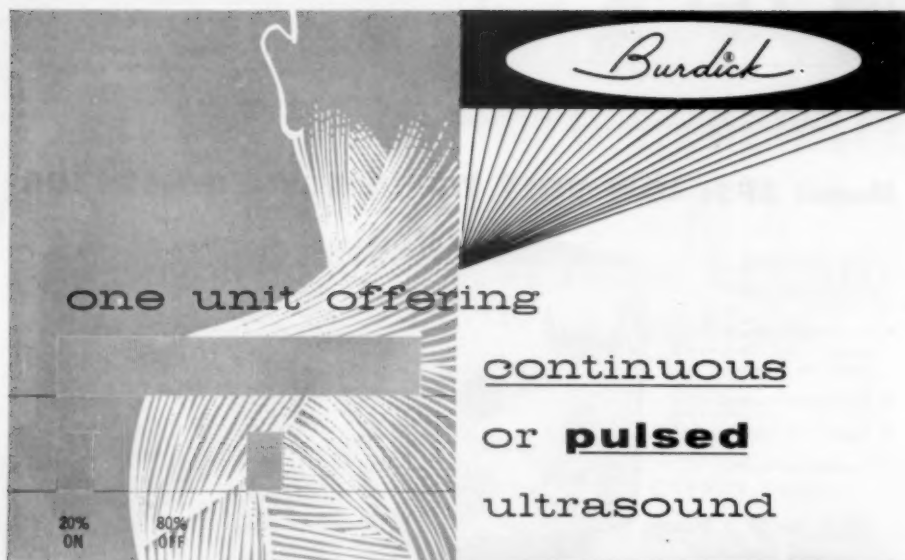
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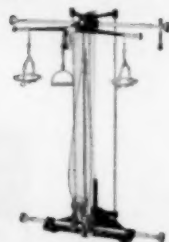


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Conditions for Optimum Work Output in Elbow Flexion, Shoulder Flexion, and Grip Ergography

H. Harrison Clarke, Ed.D.
Eugene, Ore.

Everett A. Irish, M.S.
Ellensburg, Wash.

Garland A. Trzynka, M.S.
Parkrose, Ore.

and
William Papowich, M.S.
Canada

• Use of the Kelso-Hellebrandt ergograph in single-exercise bouts of the elbow flexor and shoulder flexor muscles has been previously reported. The essential feature to achieve precision was the determination of proper load for each movement; this was found as proportionate strength of exercised muscles. For an eight-inch lever arm and with cadence of 30 repetitions per minute, the proportions were: three-eighths elbow flexion strength for elbow flexion ergography; and five-eighths shoulder flexion strength for shoulder flexion ergography. These proportions produced repeatable results, not necessarily optimum work output. The present study investigated conditions which would produce optimum work output for the elbow flexors, shoulder flexors, and gripping muscles. In each instance, experimentation was had with five cadences and five proportionate strengths, a total of 25 conditions. Exercise sessions were limited to two minutes; and the ergographic lever arm was kept constant at eight inches. Work output was the product of load in grams and cumulative distance load was raised. The optimal work output conditions were: elbow flexors, one-fourth proportion at 76 cadence; and gripping, one-half proportion at 76 cadence.

The Italian physiologist, Angelo Mosso, is credited with designing the first ergograph for the study of muscle fatigue.¹ This instrument functioned with a leather sling in which a finger was placed for exercising; weights to be lifted were attached to the end of a string which passed over a pulley, to reduce the effects of friction, and was connected to the sling.² Subsequently other experimenters introduced modifications of Mosso's original instrument. A major criticism of these early ergographs was that the accurate computation of total work done by contracting muscles was impossible, as the angle of pull changed throughout the range of motion of the joint.

In 1942, more than a half century after Mosso's classic experiments, Kelso, a mechanical engineer, and Hellebrandt, a physiatrist, devised an ergograph that determined work accomplished more precisely than was possible with earlier instruments.³ By use of a wheel and axle, this new ergograph permits application of a constant angle of resistance through a limb's full range of movement.

The height of each successive lift when exercising is added on a cumulative distance meter while being simultaneously recorded on a slowly revolving kymograph drum. The mechanical work done is calculated as the product of the amount of the load and the total distance it is lifted throughout an exercise session.

Purpose of the Research

In an earlier study, one of us (H. H. C.)^{4,5} described a single-bout method of ergography for testing the endurance of the elbow flexor and shoulder flexor muscles. Two essential features became apparent in applying this method of ergography successfully in exhaustive fatigue testing. These were: (1) consistent results could only be obtained when the exercise sessions were such as to induce exhaustion in a relatively short time (not to exceed approximately two minutes); and (2) determination of the proper load to place on the ergograph carriage was essential to achieve testing precision.

It was discovered that the amount of weight to be used for each subject could be determined as a proportion of the strength of the muscles to be exercised. With an 8-inch ergographic lever arm and with a cadence of 30 repetitions per

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minute, proportions found to be effective were: three-eighths of maximum elbow flexion strength for elbow flexion ergography and five-eighths of maximum shoulder flexion strength for shoulder flexion ergography.

These initial single-bout ergographic studies did not determine the conditions for optimum work output. The purpose of this research was to determine such conditions for elbow flexion, shoulder flexion, and grip ergography.

The Ergographs

Two Kelso-Hellebrandt instruments, the elbow and shoulder ergograph and the grip ergograph, were used in these studies. For elbow and shoulder flexion ergography (fig. 1), an 8-inch bar, or lever arm, was fixed to a sprocket wheel and, by a special cuff, to the limb of the body serving as lever for the muscle group under study. For the elbow flexor muscles, the body lever was the forearm; for the shoulder flexor muscles, this lever was the upper arm. As the subject's limb was flexed by the contracting muscles, the sprocket wheel rotated causing the

load to rise through the connecting bicycle chain. The total distance in centimeters which the load was raised during each exercise bout was determined from the cumulative distance meter in the tower of the ergograph.

The grip ergograph (fig. 2) is fundamentally the same as the other Kelso-Hellebrandt ergographs.⁶ However, the force applied by the gripping muscles is transmitted through a hydraulic system instead of a sprocket wheel and lever arm. A bulb is attached to a rubber hose, which is connected to two syphon-type valve tops with a pressure gage between them. The two valves allow water to be forced into the closed system and permits air to be released. When the bulb is compressed, the syphon bellows are filled and a rod through the base of the larger inverted valve top elevates, thus moving a lever system provided with an adjustable fulcrum. The load is raised through the connecting bicycle chain.

Subjects

For the initial phase of each of the three parts of this research (that is, elbow



Fig. 1 — Shoulder flexion — partial movement.

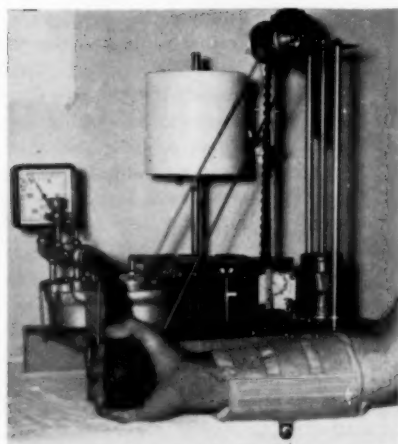


Fig. 2 — The Grip Ergograph

flexion, shoulder flexion, and grip ergography), 25 different combinations of load and cadence were studied. For each of these conditions, five subjects were used, thus necessitating a total of 125 subjects for each part, or 375 subjects for the three parts. These subjects were randomly selected male students at the University of Oregon between the ages of 18 and 26 years, who were free of physical handicaps and were willing to participate in the ergographic exercise.

Inasmuch as only five subjects were tested initially for each condition of load and cadence, a random selection procedure was adopted to determine the assignment of the subjects to the various conditions. This process is illustrated in table 1 for shoulder ergographic testing. The 25 different conditions were numbered consecutively row by row. As each subject reported for testing, his number was drawn from the Fisher and Yates table of random numbers.⁷ For example, subject No. 1 drew condition No. 22, which was a load of nine-sixteenths of his shoulder flexion strength and a cadence of 84, or 42 repetitions, per minute. This process was repeated until all 125 subjects had been included.

Analysis of Data

The statistical analysis in this study consisted of comparison of the mean

Table 1: Sample of Random Order Number of Assigning Subjects to Their Selected Condition for Shoulder Flexion Ergographic Testing

Cadences	Weight Load: Proportions of Strength				
	1/2	9/16	5/8	11/16	3/4
52 Order	13	11	7	5	16
Condition	1	2	3	4	5
60 Order	22	9	6	4	15
Condition	6	7	8	9	10
68 Order	19	12	17	14	24
Condition	11	12	13	14	15
76 Order	2	8	23	18	21
Condition	16	17	18	19	20
84 Order	20	1	25	3	10
Condition	21	22	23	24	25

work output for the various ergographic exercise conditions. For each part of the study, the differences between the highest mean and other high means were determined and tested for significance with the *t* ratio. The five subjects for each of the conditions constituted an independent sample; thus, the means were uncorrelated and were tested on this basis. The degrees of freedom were as follows: $N_1 + N_2 - 2$, or, $5 + 5 - 2 = 8$. With 8 degrees of freedom, *t*'s of 2.31 and 3.36 are necessary for significance at the 0.05 and 0.01 levels of confidence respectively.⁸

When significance was not achieved for a single combination of load and cadence, 11 additional subjects were tested in each situation with relatively high mean work output. The number thus became 16; and the degrees of freedom, 30. The *t*'s for significance at the 0.05 and 0.01 levels of confidence for 30 degrees of freedom are 2.04 and 2.75 respectively.

Elbow Flexion Ergographic Conditions

Guided by Clarke's earlier work,⁵ we chose the following five loads and five cadences for determination of optimum work output in elbow flexion ergography:

Loads. The loads were proportions in kilograms of elbow flexion strength, as follows: 1/8, 3/16, 1/4, 5/16, and 3/8. Elbow flexion strength was tested by the Clarke cable-tension method.⁹

Cadences: The cadences on the metronome were: 44, 60, 76, 92, and 108. The numbers of contractions per minute were one-half of these cadences, as the cadences provided for raising and lowering the load.

The position for exercising on the ergograph was the same as for the cable-tension strength test. This position is shown in figure 1, except the shaft of the sprocket wheel was centered on the elbow

joint and the lever arm was attached to the subject's forearm. Subjects included in this part of the study were limited to those with elbow flexion strength between 85 and 128 pounds, roughly the middle 80 per cent of subjects available. This restriction was necessary as ergograph weights were not sufficient to provide for subjects with strength beyond 128 pounds when the heaviest load was used; a comparable limitation was placed

Table 2: Elbow Flexion Ergography: Mean Work Output from Varying Conditions of Loads and Cadences* (Cm./Kg.)

Cadences	Weight Load: Proportions of Strength†				
	1/8	3/16	1/4	5/16	3/8
44	8,583 (1)	12,906 (2)	15,504 (3)	16,791 (4)	16,538 (5)
60	12,622 (6)	17,815 (7)	17,897 (8)	16,793 (9)	14,265 (10)
76	15,951 (11)	17,223 (12)	20,352 (13)	14,522 (14)	15,401 (15)
92	15,951 (16)	16,281 (17)	18,142 (18)	16,535 (19)	15,948 (20)
108	15,934 (21)	16,643 (22)	17,724 (23)	17,032 (24)	16,285 (25)

*Time limit of two minutes was imposed.

N = 5

†Condition numbers are in parentheses.

Table 3: Elbow Flexion Ergography: Differences between Means for Selected Conditions
Condition Means (Cm./Kg.)

1/4 Proportion 76 Cadence (Condition 13)	1/8 Proportion 108 Cadence (Condition 21)	1/4 Proportion 92 Cadence (Condition 18)	Dm	t
18,681	16,222		2,459	1.95
18,681		16,366	2,315	1.86

N = 16

Table 4: Shoulder Flexion Ergography: Mean Work Output from Varying Conditions of Loads and Cadences* (Cm./Kg.)

Cadences	Weight Load: Proportions of Strength†				
	1/2	9/16	5/8	11/16	3/4
52	20,985 (1)	22,162 (2)	19,492 (3)	20,174 (4)	19,035 (5)
60	24,001 (6)	24,348 (7)	21,912 (8)	22,102 (9)	17,359 (10)
68	22,006 (11)	19,766 (12)	16,454 (13)	21,614 (14)	20,942 (15)
76	20,687 (16)	21,843 (17)	22,277 (18)	18,051 (19)	19,802 (20)
84	20,660 (21)	25,325 (22)	20,053 (23)	21,697 (24)	25,191 (25)

*Time limit of two minutes was imposed.

†Condition numbers are in parentheses.

Table 5: Shoulder Flexion Ergography: Differences between Means for Selected Conditions
Condition Means (Cm./Kg.)

1/2 Proportion 84 Cadence (Condition 25)	9/16 Proportion 84 Cadence (Condition 22)	5/8 Proportion 76 Cadence (Condition 7)	9/16 Proportion 60 Cadence (Condition 6)	1/2 Proportion 60 Cadence (Condition 18)	Dm	t
21,190	20,754				455	0.50
21,190		19,712			1,486	1.02
21,190			19,561		1,633	1.07
21,190				19,006	2,192	1.16

N = 16

on subjects with the lowest scores, thus eliminating the upper and lower 10 per cent. The exercise bout for each subject continued for 2 minutes or until he reached volitional exhaustion.

The work output means obtained for the 25 combinations of loads and cadences appear in table 2. The greatest mean outputs were as follows: 20,352 cm./kg. for one-fourth proportion at 76 cadence (condition 13), 18,934 cm./kg. for one-eighth proportion at 108 cadence (condition 21), and 18,142 cm./kg. for one-fourth proportion at 92 cadence (condition 18). The differences between the mean of condition 13 and the means of conditions 21 and 18 were 1,418 and 2,210 cm./kg. respectively; the corresponding *t*'s were 1.47 and 2.63. Thus, the difference between the work output means for conditions 13 and 18 was nearly significant at the 0.01 level of confidence. However, the difference between the means of conditions 13 and 21 did not reach significance at the 0.05 level.

As a consequence, 11 more subjects were tested for each of these three conditions. The results of this additional testing appear in table 3. All means were reduced somewhat, although condition 13 with one-fourth proportion and 76 cadence continued with the highest mean work output. The differences between the mean (*Dm*) of condition 13 and the means of conditions 21 and 18 were 2,459 and 2,315 cm./kg. respectively; the corresponding *t*'s were 1.98 and 1.86. Thus, these differences nearly reached significance at the 0.05 level of confidence.

Shoulder Flexion Ergography

After exploratory trials, the weight loads and cadences selected for shoulder flexion ergography were as follows:

Loads: The loads were proportions in kilograms of shoulder flexion, as follows: 1/2, 9/16, 5/8, 11/16, and 3/4. Shoulder flexion strength was tested by the Clarke cable-tension method.⁹

Cadences: The cadences on the metronome were: 52, 60, 68, 76, and 84. The numbers of contractions per minute were

one-half of these cadences, as the cadences provided for raising and lowering the load.

The position for exercising on the ergograph was the same as for the cable-tension strength test. The shaft of the sprocket wheel was centered on the shoulder joint, as shown in figure 1. In this ergographic exercise, the forearm was held extended across the subject's chest as the upper arm was raised. The same 2-minute time limitation as for elbow flexion ergography was imposed.

The work output means obtained for the 25 combinations of loads and cadences appear in table 4. The greatest mean outputs were as follows: 25,325 cm./kg. for nine-sixteenths proportion at 84 cadence (condition 22), 25,181 cm./kg. for three-fourths proportion at 84 cadence (condition 25), 24,349 cm./kg. for nine-sixteenths proportion at 60 cadence (condition 7), 24,001 cm./kg. for one-half proportion at 60 cadence (condition 6), and 23,277 cm./kg. for five-eighths proportion at 76 cadence (condition 18). The differences between the highest mean, condition 22, and the other means ranged from 144 to 2,058 cm./kg. None of these differences was found to be statistically significant, as the highest *t* was 0.70.

Consequently, 11 more subjects were tested for each of these five conditions. The results of this additional testing appear in table 5. Condition 25 with three-fourths proportion and 84 cadence now had the highest mean work output, although these two means were close together (within 144 cm./kg.) in the initial testing. The differences between the means were greater than for five subjects only, ranging from 445 to 2,192 cm./kg.; the *t*'s were also greater, with three of them exceeding 1.00. However, again, they did not reach statistical significance.

Grip Ergography

Preliminary trials of various weights and cadences were conducted with a few subjects on the grip ergograph. On this basis the following were selected:

Loads. The loads were proportions in kilograms of grip strength, as follows: 1/8, 1/4, 3/8, 1/2, and 5/8. Grip strength was tested by squeezing a manometer as hard as possible, in accordance with the technic described by Clarke.¹⁰

Cadences. The cadences on the metronome were: 22, 26, 30, 34, and 38. The numbers of contractions per minute were one-half of these cadences, as the cadences provided for raising and lowering the load.

The position for exercising on the grip ergograph is illustrated in figure 2. The subject sat beside the test table holding the ergograph bulb. An arm guard was strapped to his forearm and attached to the table in order to stabilize the exercising arm. The usual 2-minute time limitation was placed on this testing.

The work output means obtained for the 25 combinations of loads and cadences appear in table 6. Inasmuch as high means resulted from testing with the highest cadence, 76, five subjects were tested for each of three additional situations, cadence 84 with one-fourth, three-eighths, and one-half proportions. These results also are included in table 6.

The greatest mean outputs for this testing were as follows: 14,749 cm./kg. for one-half proportion at 76 cadence

(condition 24), 12,990 cm./kg. for three-eighths proportion at 68 cadence (condition 18), and 11,745 cm./kg. for three-eighths proportion at 76 cadence (condition 23). The differences between the mean of condition 24 and the means of conditions 18 and 23 were 1,759 and 3,004 cm./kg. respectively; the corresponding *t*'s were 1.52 and 1.72. Thus, these differences did not reach significance at the 0.05 level of confidence.

As was done in the other parts of this study, 11 more subjects were tested for each of the three high conditions. The results of this additional testing appear in table 7. The mean work output for condition 24 now was 15,649 cm./kg., an increase of 900 cm./kg. The means for conditions 18 and 23 also increased but not as much, 532 and 37 cm./kg. respectively. The differences between the means of conditions 24 and 18 was 3,191 cm./kg.; and between the means of conditions 24 and 23, 3,941 cm./kg. These differences were significant beyond the 0.01 level of confidence, as the corresponding *t*'s were 4.28 and 4.61.

Conclusions

Various combinations of load and cadence were investigated to determine optimum work output for single-bout

Table 6: Grip Ergography: Mean Work Output from Varying Conditions of Loads and Cadences*
(Cm./Kg.)

Cadences	Weight Load: Proportions of Strength†				
	1/8	1/4	3/8	1/2	5/8
44	3,463 (1)	6,913 (2)	7,860 (3)	8,449 (4)	8,557 (5)
52	4,248 (6)	7,738 (7)	8,067 (8)	10,577 (9)	6,749 (10)
60	5,058 (11)	9,058 (12)	11,414 (13)	9,610 (14)	8,450 (15)
68	5,026 (16)	9,884 (17)	12,990 (18)	11,665 (19)	7,854 (20)
76	5,723 (21)	10,749 (22)	11,745 (23)	14,749 (24)	8,652 (25)
84		10,751 (26)	8,532 (27)	7,829 (28)	

*Time limit of two minutes was imposed.

†Condition numbers are in parentheses.

N = 5

Table 7: Grip Ergography: Differences between Means for Selected Conditions
Condition Means (Cm./Kg.)

1/2 Proportion 76 Cadence (Condition 24)	3/8 Proportion 68 Cadence (Condition 18)	3/8 Proportion 76 Cadence (Condition 23)	Dm	t
15,649	12,458		3,191	4.28
15,649		11,708	3,941	4.61

N = 16

elbow flexion, shoulder flexion, and grip ergography. The following conclusions are presented:

1. For elbow flexion ergography, the best combination was a load of one-fourth proportion of elbow flexion strength and a cadence of 76. Inasmuch as statistical significance did not quite reach the 0.05 level of confidence, this condition is recommended only for this form of ergography.

2. For shoulder flexion ergography, the combination of three-fourths proportion of shoulder flexion strength and a cadence of 84 had some advantage over the other conditions. However, as this advantage is not statistically significant, this combination is suggested only for this form of ergography.

3. For grip ergography, the combination of one-half proportion of grip strength and a cadence of 76 had definite superiority. Consequently, this combination should be used for this form of ergography.

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References

1. Franz, S. I.: On the Method of Estimating Force of Voluntary Muscular Contractions and on Fatigue. *Am. J. Physiol.* 4:348 (Nov.) 1900.
2. Mosso, A.: *Fatigue*. Translated by M. Drummond and W. B. Drummond, London, S. Sonnenschein & Co., 1906.
3. Hellebrandt, F. A., and Skowlund, H. V.: Application of Ergography to Disability Evaluation: I. Normal Fatigue Curve. *Am. J. Occup. Therapy* 1:73 (April) 1947.
4. Clarke, H. H.: Precision of Elbow Flexion Ergography under Varying Degrees of Muscular Fatigue. *Arch. Phys. Med.* 33:279 (May) 1952.
5. Clarke, H. H.: Single Bout Elbow Flexion and Shoulder Flexion Ergography under Conditions of Exhaustion Testing. *Arch. Phys. Med.* 34:240 (April) 1953.
6. Hellebrandt, F. A.; Houtz, S. J., and Kelso, L. E. A.: New Devices for Disability Evaluation: 3. Grip Ergograph. *Arch. Phys. Med.* 31:207 (April) 1950.
7. Fisher, R. A., and Yates, F.: *Statistical Tables for Biographical, Agricultural, and Medical Research*, ed. 4, London, Oliver & Boyd, Ltd., 1953.
8. Garrett, H. E.: *Statistics in Education and Psychology*, ed. 4, New York, Longmans, Green & Co., Inc., 1953, pp. 213-17, 427.
9. Clarke, H. H.: Cable-Tension Strength Tests, Chicopee, Mass., Brown-Murphy Co., 1953.
10. Clarke, H. H.: *Application of Measurement to Health and Physical Education*, ed. 2, New York, Prentice-Hall, Inc., 1950, p. 158.

REMEMBER TO REGISTER EARLY FOR THE MEETING

Official registration will be open on
SUNDAY, AUGUST 24 from 10:00 A.M. to 5:00 P.M.
in the GRAND BALLROOM FOYER

Tickets for the CONGRESS/ACADEMY Dinner will be available

Evaluation of Rehabilitation of the Severely Handicapped Cerebral Palsied Child

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• The experience of the children's cerebral palsy unit of the department of physical medicine and rehabilitation of the New York Medical College, Metropolitan Medical Center since its inception in October, 1954, is reviewed. Based on work with 53 severely disabled cerebral palsied children, with multiplicity of intellectual and physical handicaps, an attempt has been made to assess objective functional improvement in major activities of self-care and ambulation. Criteria were set up to determine the amount of capacity to function in feeding, dressing, toileting, ambulation, and speech, on admission and at time of study. An assessment of the results of an active rehabilitation program for this severely handicapped group has been made with a discussion of the special goals that must be set, the factors which affect progress in these major areas, and the additional gains that can be seen are presented.

The rehabilitation of the severely brain-damaged child is a problem of great complexity. Such children frequently have disturbances in the intellectual and emotional as well as the sensory and motor spheres of brain function, and as a result, are multiply handicapped.¹⁻³

There are many facilities in this country providing long-term care for the cerebral palsied. Such facilities may be divided into two categories: (1) Those providing care for the mildly and moderately involved; (2) those providing care for the severely involved. The major facilities for the severely involved cerebral palsied child are essentially state institutions which provide custodial services for the severely retarded.

In October, 1954, the department of physical medicine and rehabilitation of the New York Medical College, Metropolitan Medical Center established a 40-bed children's unit at Bird S. Coler Hospital for severely disabled cerebral palsied children. Its objective was to provide an active total rehabilitation program for this group. The children's unit is a service in a 2,000-bed chronic disease municipal teaching hospital. It is staffed by a full-time chief, a physician; a full-time pediatrician serving as a fellow in physical medicine and rehabilitation; and consultative medical specialists in orthopedics, neurology, ophthalmology, psychiatry, and dentistry. The unit provides the following services: nursing; speech, physical, occupational, and psychological therapy; group work and recreation, social service, and educational and vocational counseling. The team approach is used both in evaluation and in therapy.⁴ The children were referred primarily by New York City cerebral palsy out-patient clinics and by private physicians. Our patients ranged in age from 5 to 21 years.

The purpose of this study is to evaluate the functional accomplishments that may be anticipated from an intensive in-patient rehabilitation program for severely disabled cerebral palsied children.

Method of Study

Fifty-three consecutive patients were studied. Of this number, 25 were still on the program at the time of review. All patients received therapy for at least 3 months, with a maximum length of stay of 26 months. The average time for active therapy was 11 months. Information was obtained from three sources: (1) Direct observation and examination of patients by the authors, (2) review of medical charts, and (3) discussion with various therapists.

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The functional evaluation of the patient was considered the most practical method of study. Criteria were established in the areas of feeding, dressing, ambulation, wheelchair management, toileting, and speech (table 1).⁵ Each patient was evaluated as to his capacity on admission and at the time of this study. The establishment of criteria presented definite difficulties, since each of the functional tasks is a composite one. For example, toileting consists of such diverse factors as incontinence, communication, transfer ability, and dressing, all of which are important in order to reach functional independence. The same composite character governs all other functional activities used in this study.

Discussion of Results

In assessing the results of therapy, all criteria are based upon improvements in function rather than specific increases in either range of motion or motor power.^{6, 7} The criteria used in our study are arbitrary. The differences between one step and the next in the same category are sometimes very wide. Thus, for example, in ambulation, a child who could not walk at all was designated "severe," while a child who could walk a block was designated as "moderate." It is obvious that there is an enormous difference between these two functional categories.

To add to the problem, there were wide differences in children placed within one step of a given category. Further, progress could occur without changing a child's designation. For example, acquisition of sitting and standing balance did not move a child out of the "severe" category in ambulation. We chose these criteria in order that we might have simple, well-defined categories. It is apparent that had we chosen 20 steps instead of 4, the status of any particular child might have been more clearly defined.

Another difficulty in evaluating the results lies in the heterogeneity of so small a group. The wide range of the patient population with which we deal

Table 1: Functional Criteria*

Feeding	
<i>Independent:</i>	Normal handling of food at a table, including drinking from a glass, use of knife to cut. May include use of assistive devices, such as splints.
<i>Mild:</i>	Eats with spoon and fork, drinks from cup or glass, unable to cut or butter bread.
<i>Moderate:</i>	Eats with spoon with difficulty, may need semisolid food. Needs assistance for drinking or may use straw.
<i>Severe:</i>	Dependent on being fed all items. May finger-feed or be able to bring spoon to mouth, but performance is not functional.
Dressing	
<i>Independent:</i>	Fully independent for age, including all fastenings and braces. May include use of special devices such as adapted clothing.
<i>Mild:</i>	Independent except for certain fine items such as fastenings or certain gross items such as reaching to feet to put shoes on.
<i>Moderate:</i>	Only undressing is possible. No dressing — or requires some assistance in both.
<i>Severe:</i>	Dependent on being dressed.
Ambulation	
<i>Independent:</i>	Travels with ease; manages all types of steps and terrain; good gait pattern with appliances if needed.
<i>Mild:</i>	Walks with good balance for fair distances (5-6 blocks); unable to manage bus steps or rough terrain; or walks with markedly impaired gait pattern.
<i>Moderate:</i>	Ambulates for short distances (about a block) or unsteadiness necessitates supervision. Inadequate on stairs or rough terrain.
<i>Severe:</i>	Wheelchair bound or walks only when supported by another person.
Wheelchair Management	
<i>Independent:</i>	Able to wheel chair, lock, unlock, steer, transfer to bed or any type of seat. May involve use of special devices.
<i>Mild:</i>	Able to wheel and steer chair, may need assistance or supervision in transfer.
<i>Moderate:</i>	Wheels independently, transfers with maximal assistance.
<i>Severe:</i>	Unable to wheel chair more than a few feet or to transfer.
Toileting	
<i>Independent:</i>	Fully competent and continent, able to transfer to toilet and arrange clothing.
<i>Mild:</i>	Fully continent, adequate except for a little assistance such as getting pants up. Or needs help to transfer, but shifts own weight.
<i>Moderate:</i>	Needs maximum assistance in either transfer or arranging clothing. May have occasional incontinence at night.
<i>Severe:</i>	Entirely dependent and/or incontinent.
Speech	
<i>No defect:</i>	Adequate speech for communication, including articulation, phonation, language, and comprehension of oral speech.
<i>Mild:</i>	Difficulty in articulation, phonation, language, comprehension of oral speech, or a combination of two or more of the above, not interfering with intelligibility.
<i>Moderate:</i>	Difficulty in articulation, phonation, language, comprehension of oral speech, or a combination of two or more of the above resulting in poor intelligibility.
<i>Severe:</i>	Difficulty with one or more of the above speech skills to the degree that little or no verbal communication is possible.

*In grading a child on the basis of these criteria, the examiner takes into consideration the age of the child.

includes various degrees of mental and physical handicap plus associated disabilities and psychosocial difficulties.

One of the immediate problems we encountered in attempting to classify these patients was in the area of psychological capacity. Several psychological tests were employed, including the Columbia Mental Maturity Scale, the Stanford Binet, the Wechsler Intelligence Scale for Children, and the Cattell Infant Scale. Administration of these tests by standardized technics was often impossible.⁸ The limitations that were imposed included hearing deficit; emotional and social factors, such as lack of social experience, behavioral disturbances, educational deprivation, and speech and other communication difficulties; and, finally, severe motor handicap. Because of these factors, a true and objective picture of the intellectual capacity of these children often could not be obtained by

psychometric testing. The diversity and interrelationship of the factors involved in motor and intellectual functions are illustrated by the tables that follow.

An analysis of our clinical diagnoses indicates the severity of the motor disabilities dealt with;⁹⁻¹¹ 49 of our 53 cases or 81 per cent had involvement of all 4 extremities:

33 cases (62.2%) were spastics
13 cases (24.5%) were athetoids
5 cases (9.4%) were of a mixed type
2 cases (3.8%) were atonic

As can be observed (table 3), we tended to accept athetoids with higher intelligence quotients. Out of 18 patients with an I.Q. under 60, 17 were spastics and only one athetoid. This may reflect a greater difficulty in rehabilitating the athetoid patient and the necessity for higher mental function in the athetoid group to achieve modest results. A

Table 2: Diagnosis — Type of Motor Disturbance by Number of Extremities Involved

	Athetoid	Spastic	Mixed Spastic and Athetoid	Mixed Spastic and Ataxic	Mixed Athetoid and Ataxic	Atonic	Total
Quadruplegic	13	17	3	1	1	..	35
Diplegic .....	..	12	..	..	..	2	14
Triplegic .....	..	1	..	..	..	..	1
Hemiplegic .....	..	2	..	..	..	..	2
Paraplegic .....	..	1	..	..	..	..	1
Total	13	33	3	1	1	2	53

Table 3: Diagnosis — Type of Motor Disturbance — by I.Q.

	Athetoid	Spastic	Mixed Spastic and Athetoid	Mixed Spastic and Ataxic	Mixed Athetoid and Ataxic	Atonic	Total
80 or above	4	8	..	..	..	..	12
60-79	8	8	1	1	..	..	18
40-59 .....	..	10	..	..	1	..	11
Under 40	1	7	2	..	..	2	12
Total	13	33	3	1	1	2	53

Table 4: Correlation of Extent of Motor Disability with I.Q.

	Quadruplegic	Diplegic	Triplegic	Hemiplegic	Paraplegic	Total
80 or above	6	4	1	..	1	12
60-79	13	5	..	..	..	18
40-59	8	3	..	..	..	11
Under 40	8	2	..	2	..	12
Total	35	14	1	2	1	53

picture of the functional disabilities in our 53 patients can be obtained by noting the number of children classified as "severe" on admission in each functional category used in our study:

In feeding, 12 out of 53 patients
 In dressing, 24 out of 53 patients
 In ambulation, 37 out of 53 patients
 In wheelchair activities, 18 out of 53 patients
 In toileting, 18 out of 53 patients
 In speech, 21 out of 53 patients

Progress achieved in the above listed functions is recorded in table 5.

As can be noted, all children were not on a program in all functional categories. The basis for assignment of a child for therapy in a particular area was determined by the goals set at the time of the initial evaluation or subsequent re-evaluation of the team. This table shows that approximately two-thirds of the patients receiving therapy in any motor area attained improvement in at least one step. In the area of speech, this ratio was much lower. Only 4 out of 30 children improved. The criteria we have used for speech evaluation may be open to criticism. There have been no satisfactory standards yet developed to measure progress in this area for such children. In the area of speech, the four children labeled as "Improved" all clearly had "single-word" speech on admission and were using sentences in their daily living at the time of the study. Diminution in dysarthria could not be measured. It was our impression that the progress seen was due to the formal speech program in conjunction with social stimulation and maturation.

In toileting, 24 out of 35 improved. Most of the successes were due to improvement in wheelchair transfer. We were unable to affect incontinence in any of the 6 patients so designated, although nursing was made easier by routinizing them. Similarly, control of obesity and devices such as modified clothing increased ease in transferring of dependent patients to the toilet, even where no "category step" was made.

In feeding, 18 out of 28 children improved.

Table 5: Functional Results

I.Q.	Independent	On Program		
		No Programs	Improved	No Improvement
		Feeding		
80	5	1	5	1
60-79	4	3	6	5
40-59	5	0	6	6
Under 40	0	7	1	4
Total ..	14	11	18	10
Dressing				
80	0	1	6	5
60-79	0	6	5	7
40-59	1	1	5	4
Under 40	0	1	4	7
Total ..	1	9	20	23
Ambulation				
80	0	3	4	5
60-79	0	8	6	4
40-59	1	4	5	1
Under 40	2	2	5	3
Total ..	3	17	20	13
Wheelchair				
80	2	0	10	0
60-79	2	3	8	5
40-59	4	0	3	4
Under 40	4	1	4	3
Total ..	12	4	25	12
Toileting				
80	1	0	10	1
60-79	4	7	5	2
40-59	3	1	5	2
Under 40	2	0	4	6
Total ..	10	8	24	11
Speech				
80	6	2	0	4
60-79	4	3	1	10
40-59	3	1	2	5
Under 40	0	4	1	7
Total ..	13	10	4	26

In dressing activities, 20 out of 43 improved. The failures in the severely retarded group appeared to be due to the complexity of the tasks in this area rather than to deficient motor ability in the cases we studied. In a few children, full independence in dressing could not be achieved because of their elaborate bracing, which could not be self-applied under any circumstances.

In ambulation, 20 out of 33 improved. Of 8 children with I.Q.'s under 40, five

Table 6: Number of Areas in Which Improvement of at Least One Step Occurred
(Six areas tabulated in study)

I.Q.	No Areas	1 Area	2 Areas	3 Areas	4 or More Areas	Total
80	1	0	2	6	3	12
60-79	4	4	6	2	2	18
40-59	0	4	2	3	2	11
Under 40	4	2	3	2	1	12
Total	9	10	13	13	8	53

showed improvement. The numbers involved are too limited to draw conclusions. However, it is our impression that mental retardation *per se* is not a barrier to attaining the ability to walk, a comparatively primitive function, in contradistinction to speech, a more complex and higher function of the human cortex.

Children in the higher I.Q. brackets made the largest number of gains per patient, as can be seen in table 6.

Nine children failed to show improvement in any area. Four of these were severely retarded, hyperactive, and distractible. In three, failure was due to severe athetosis. Another patient has improved since the time of study. The ninth child had a visual motor impairment requiring a preliminary program before beginning functional training. This preliminary program will be elaborated later.

A large miscellany of associated pathological findings was noted in our patients as is seen in table 7.

The major handicaps found were ophthalmological defects. Refractive errors requiring correction with glasses were present in 39 patients. Other ocular defects occurred in 14 cases. Visual-motor or perceptual motor disturbances were recorded in 5 of our patients, but were suspected in a number of others as factors interfering with progress, even when not objectively obtained by other tests. We found that when a visual-motor difficulty was severe, a prolonged preliminary program of training in concepts of shape and size was needed before conventional rehabilitation training could be begun.

Seizures that could be controlled with anticonvulsant drugs were present in 4 patients. The fifth case escaped com-

plete control. It should be emphasized that convulsions may materially interfere with an intensive rehabilitation program. The pressure of increased physical activity as well as mental and emotional strain appeared to precipitate more seizures in at least one patient. The lack of recognition of minor seizures caused several patients to be characterized as irritable, lethargic, or uncooperative for a time.

Emotional disturbances were difficult to assess since personality problems were noted in nearly all our patients when given an opportunity to air their feelings through various technics, including group discussion and play media. The 6 children labeled as "disturbed" in table 7 under "Miscellaneous" were those in whom anxiety, homesickness, tantrums, or withdrawal were sufficiently manifest in overt behavior to interfere with therapy. One child was diagnosed as schizophrenic by the staff psychiatrist, but was able to progress in self-care training despite his severe anxiety and frequent outbursts.

As has been indicated in previous publications on cerebral palsy, many of these patients come from profoundly disturbed homes. In our group, histories of separations, neuroses, and even psychoses were common among the families. These home difficulties sometimes necessitated intensive family counseling to elicit cooperation in carrying over gains made to a home setting, and thus to help effect discharge. Financial difficulties, inadequate housing, and similar burdens were frequent. Ten of our children became custodial, reflecting both the real burden of a partly dependent child on a harassed family as well as the rejection of a handicapped youngster by unstable parents.

Table 7: Associated Findings

Vision	Sensorial	Number of Patients
Refractive errors		39
Hyperopia		14
Myopia		15
Antimetropia		2
Hyperopia and astigmatism		6
Myopia and astigmatism		2
Visual-motor defect		5
Strabismus		7
Nystagmus		4
Cataract		1
Pallor of optic discs		2
Hearing		
Deafness, severe		2
Musculoskeletal		
Contracture		17
Scoliosis		4
Dislocation of hips		5
Clubfeet		1
Arthrogryposis		1
Malformation of cervical vertebrae		1
Miscellaneous		
Behavior disturbances		6
Obesity		3
Decubitis ulcers		1
Precocious puberty		1
Congenital heart disease		1
Hemimatrophy		1
Allergies		1
Seborrheic dermatitis		1
Oxycephaly		1
Arrested hydrocephalus		4
Convulsions		5

All of the custodial patients showed improvement in at least one area; and of the 10, six were borderline or of normal intelligence. These children demonstrate the still-unmet need for permanent residential facilities for the severely handicapped child.

Summary and Conclusion

Evaluation of the results of therapy with cerebral palsied children by means of assessment of functional gains has been presented. Ambulation training as

well as accomplishment of self-care skills can be taught even to severely retarded children. Difficulties in developing adequate criteria for evaluation of treatment, particularly in speech, have been noted. Social and psychological factors affecting the care of these children were discussed. Significant progress can be made in the rehabilitation of the severely handicapped cerebral palsied child in an inpatient setting. However, such achievement requires prolonged and concerted effort.

References

1. Benda, C. E.: *Developmental Disorders of Mentation and Cerebral Palsies*, New York, Grune & Stratton, Inc., 1952.
2. Courville, C. B.: *Cerebral Palsy*, Los Angeles, San Lucas Press, 1954.
3. Cardwell, V. E.: *Cerebral Palsy — Advances in Understanding and Care*, New York Association for the Aid of Crippled Children, 1956.
4. Tobis, J. S.: Rehabilitation of the Handicapped Child. *New York State J. Med.* 56:2354 (Aug. 1) 1956.
5. Wallace, H. M.: Study of Follow-up of Children with Cerebral Palsy. To be published.
6. McCoy, G. F., and Rusk, H. A.: *An Evaluation of Rehabilitation, Rehabilitation Monograph 1*, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, 1953.
7. Wallace, H. M., and others: Evaluating Care of the Orthopedically Crippled. *Children* 3:139 (July-Aug.) 1956.
8. O'Brien, V., and Hewson, L.: Analysis of Psychological Examination of Children with Cerebral Palsy. *J. Child Psychiat.* 1:121, 1948.
9. Perlstein, M. A., and Barnett, H. E.: Nature and Recognition of Cerebral Palsy in Infancy. *J.A.M.A.* 148:1389 (April 19) 1952.
10. Phelps, W. M.: Description and Differentiation of Types of Cerebral Palsy. *Nerv. Child* 8:107 (April) 1949.
11. Minear, H.: Classification of Cerebral Palsy. *Pediatrics* 18:841 (Nov.) 1956.

Pre-Vocational and Vocational Training for the Cerebral Palsied

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● In 1952 the United Cerebral Palsy Association of Los Angeles County opened its pre-vocational and vocational Industrial Training Workshop in Los Angeles. Applicants are screened by a team of specialists, and routine laboratory procedures are carried out. Applicants can be divided into two main groups namely those with potential for industrial employment, and those too severely handicapped to compete in industry. Trainees follow individualized programs directed toward fullest development of potential. Some, because of limitations, receive training only in the activities of daily living. The Industrial Training Workshop simulates actual industrial employment conditions, insofar as possible. Equipment is ingeniously adapted to the special needs of trainees. The Center is on a nearly self-supporting basis. Goals of the Center are to train severely handicapped cerebral palsied adults for self-sufficiency in activities of daily living; to train and place potentially capable cerebral palsied individuals in private industry; to determine basic standards for recognizing potentialities at an age earlier than now possible; a research program to determine the results of this "sum-total push" program is now being carried out; to determine correlation between dexterity and coordination, and future work potential. The records of this Center will furnish basic statistics in many aspects of cerebral palsy.

In the past, the need for special vocational services for the adult cerebral palsied has been recognized by local public agencies and the medical advisory board of the United Cerebral Palsy Association of Los Angeles County. The complexity of the problems involved in habilitation and rehabilitation of the cerebral palsied, as compared with other handicapped individuals, is a special challenge.

For example, Whitehouse¹ has stated: "As a group the cerebral palsied is the most difficult single disability classification with which a vocational counselor has to deal." Glick,² in a survey of 200 cerebral palsied individuals, found that 21 per cent were employed, another 20 per cent had held temporary jobs previously, and 59 per cent had never had any type of employment.

Aims of the Special Training Center

This center was established to evaluate cerebral palsied adult applicants and to provide, or arrange for, counseling in

their special problems and to train as many as possible for successful job placement.

Services Provided at the Center

The 250 clients served from the date of opening of the center, February, 1954, through June, 1957, all received general medical and neuromuscular examinations and social service consultation. The majority also received occupational therapy and psychological evaluation. The vocational director interviewed the great majority of clients, and a few with special needs received psychiatric and other consultations.

Social service, psychological and psychiatric counseling, occupational therapy and training in the activities of daily living, and training in the industrial workshop were provided as recommended after evaluation.

Of the entire group of 250, 44 were evaluated only, 58 had counseling in addition to evaluation, 56 occupational therapy also, 51 had evaluation, occupational therapy, and workshop training, and 41 had evaluation and workshop training.

Characteristics of the Group

Of the total 250 clients, 158 were male, 92 female. Their ages ranged from 16 to

¹Read at the Thirty-fifth Annual Session of the American Congress of Physical Medicine and Rehabilitation, Los Angeles, September 11, 1957.

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Director of Social Service, United Cerebral Palsy Association Vocational Training Center.

Office of Vocational Rehabilitation Project Director, United Cerebral Palsy Association Vocational Training Center.

52 years, with 60 per cent being below the age of 30 years. The clinical types found were as follows:

Spastic	102
Athetoid	96
Mixed	35
Other	17
Total	250

For this study, the terms mild, moderate, and severe refer to the physical disability only. The degree of severity was as follows:

Severe, all areas	40
Moderate, all areas	97
Mild upper, moderate to severe lower	20
Mild, all areas	65
Unclassified	28
Total	250

The extent of involvement is shown below:

Paraplegia	12
Hemiplegia	40
Triplegia	23
Quadriplegia	173
Other	2
Total	250

Relating clinical type to degree of severity in figure 1, we find that spastics occurred nearly equally in all groups, and athetoids were well represented except in the group having mild involvement of the upper extremities and moderate to severe involvement of the lower extremities.

In figure 2 it is noted that spastics were well represented among the different topographical groups, whereas the

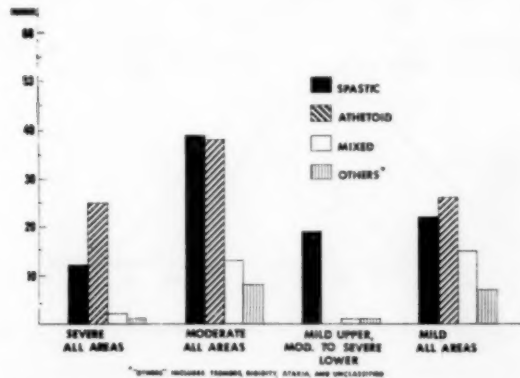


Fig. 1 — Clinical type and degree of severity of 229 cerebral palsied adults.

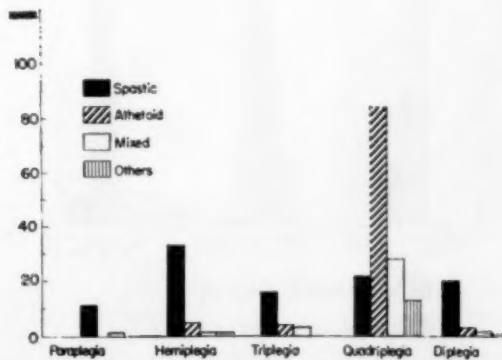


Fig. 2 — Clinical type and extent of cerebral palsy.

great percentage of athetoids were quadriplegics. Those having paraplegic, hemiplegic, and diplegic involvement were almost exclusively spastics.

Figure 3 compares the findings of intelligence tests done on 141 cerebral palsied trainees in this group with norms for the population as a whole. It is obvious that the mean of 82 is considerably lower than the normal mean of 100. Not only is the mean lower in the cerebral palsied group as compared with the normal group, but the curve is observed to be considerably broader. It is of interest to note that our findings correspond closely to the mean I.Q. of 83.8 per cent for a group of cerebral palsied adults reported by Whitehouse.¹

The manual dexterity of the cerebral palsied group was compared with that of

the normal, using the General Aptitude Test Battery, United States Employment Service (fig. 4). All of the 156 tested fell below the 26th percentile of the nonhandicapped in unilateral gross dexterity (GATB 10). In the bilateral gross test (GATB 9), all 143 tested fell below the first percentile, and in the bilateral fine (GATB 11 and 12), all of the 139 tested fell below the 11th percentile.

Training Given

Following departmental evaluation, global staff recommendations were made for training as noted in Table 1.

This table indicates the degree of severity of handicap of the clients referred for occupational therapy and workshop training. It is noted that very

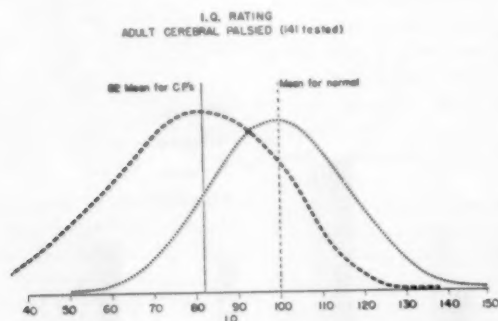


Fig. 3 — I. Q. rating of 141 cerebral palsied adults.

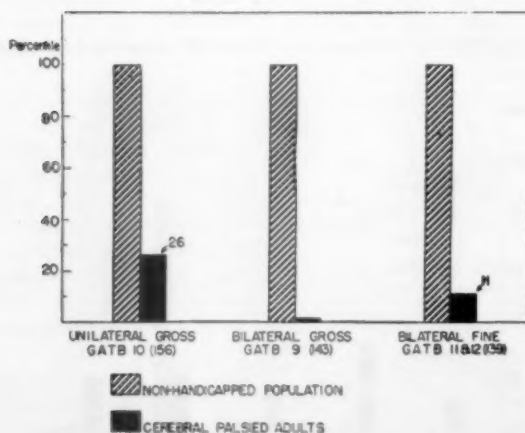


Fig. 4 — Results of manual dexterity tests of cerebral palsied adults compared with those for nonhandicapped.

Table 1: Type of Training Given by Degree of Involvement

Degree of Involvement	Occupational Therapy (Number)	Workshop (Number)	UCPA Total (Number)
Severe, all areas	25	3	40
Moderate, all areas	45	41	98
Mild upper, moderate to severe lower	8	8	21
Mild, all areas	24	34	70
Totals	102	86	229

few of the severely involved were recommended for workshop training. This group appears to correspond with the Functional Rating Class IV as outlined by Minnear.³ In the group of moderately physically handicapped, referrals were made about equally to both occupational therapy and workshop training. In the mildly involved group, as might have been expected, the larger proportion was referred to the workshop. The table indicates that not all of the applicants in any of the categories were referred for prevocational or vocational training. Some were not considered suitable candidates, some came to the center for

advice or counseling only, and for others, distance was too great or transportation not available.

It is of interest to note in figure 5 that activity of daily living tests given to 107 clients before and after they had experienced occupational therapy and workshop training show a slight reduction in the number of poor and fair performances, marked reduction in the number of spotty performances, and considerable increase in the number of good test results following a period of training at the center.

Of the total group receiving workshop training, those with spastic cerebral palsy

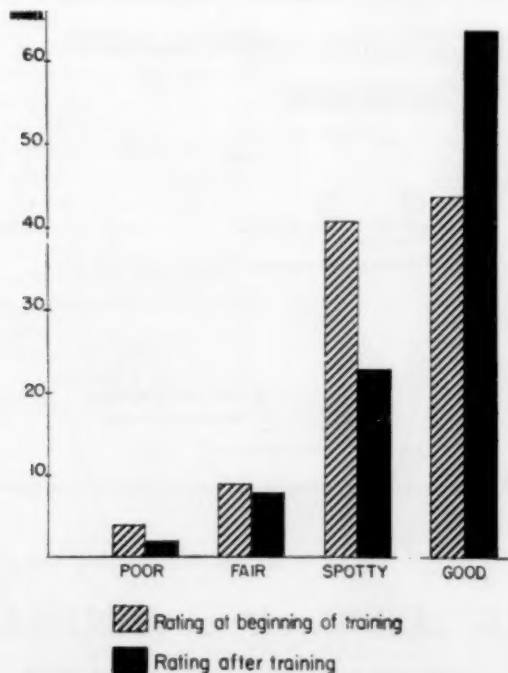


Fig. 5 — Activities of daily living ratings for trainees having occupational therapy and workshop training.

showed the highest earning ability or maximum earnings per hour (fig. 6), 76 per cent of this group making more than 75 cents an hour as compared with 53 per cent of the athetoids and 62.5 per cent of the mixed types. The maximum wage level was reached on the average within four to six months.

The employment outcome of 211 who have left the center is shown in figure 7. The dotted line indicates the 158 who received no workshop training, the solid line, the 53 who did receive such training. It is noted that the percentage of unemployed decreased and the percentage of employed full-time increased in the group who received workshop training. In the group of individuals who completed workshop training, seven of the nine reported as "not employed" are women who left to be married.

Glick's survey of cerebral palsied adults revealed: "Almost three quarters of the adults interviewed manifested behavior symptomatic of emotional maladjustment so severe that it precluded the possibilities of job placement. In view of these findings, it is essential that case work and psychiatric help be available early in the rehabilitative process to help those afflicted to live with themselves, adjust to their handicapped condition, and live happier, more complete lives."⁸

Of the total of 250 cerebral palsied adults contacted at our center, sufficient information was available for 143 individuals to indicate that contacts at the center resulted in improved emotional adjustment in about half of those served. The group who were included in the workshop training program showed the greatest percentage of change, 60 per

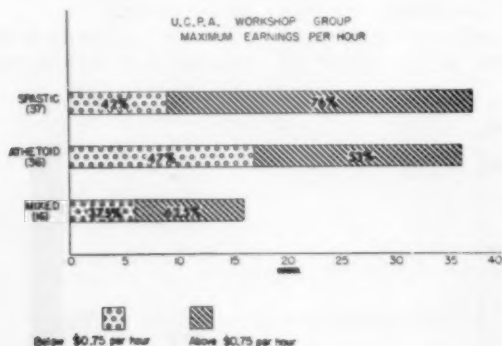


Fig. 6 — Maximum earnings per hour for workshop group.

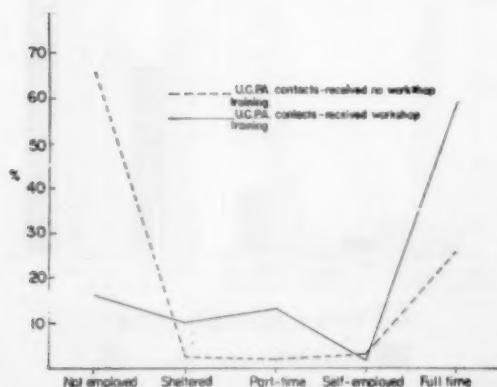


Fig. 7 — Employment status of 211 cerebral palsied adults.

cent experiencing improvement in emotional adjustment.

Our clients engaged in the following work upon leaving the workshop:

*Housewife	4
Student	12
Manual work	15
Mechanical work	9
Service work	2
Clerical and sales work	9
Professional, technical, and managerial work	2
Total	53

*Three others have been married, but are students or employed.

Jobs secured by those leaving the workshop are not always those for which specific training was given at the center.

Conclusions

The proportion of mildly, moderately, and severely involved cerebral palsied adults coming to this center was roughly that postulated for the cerebral palsied group as a whole: namely, 25 per cent severely, 50 per cent moderately, and 25 per cent mildly involved physically.

The mean mental ability was about 82 in this cerebral palsied group as compared with 100 in the normal population.

The manual dexterity, as determined on standardized tests, fell far below the normal; bilateral gross tests were poorest, bilateral fine were very poor also, and unilateral gross for this group was under the 26th percentile for the normal.

Despite these findings, significant improvement was noted in activities of daily living after training at the center, and the percentage of individuals with outside full-time employment rose from 15 per

cent to 60 per cent in the group who received workshop training at the center.

Counseling and experience in the workshop appear to lead to improved emotional adjustment and better work habits so that individuals may secure and retain employment. Emotional adjustment improved in half of the entire group at the center and in 60 per cent of those receiving workshop training.

Some values cannot be measured with statistics. Most of the cerebral palsied adults who have come to our center have found acceptance, understanding of their problems, and fellowship with others similarly handicapped.

It is too soon to tell whether training, as given, will lead to long-term employment. Studies are currently under way to attempt to identify those factors in physical and mental health and in training which are most important in the attainment of personal and economic independence in the cerebral palsied adult.

We appreciate the interest and co-operation of the federal Office of Vocational Rehabilitation, our local Bureau of Vocational Rehabilitation, and other public and private agencies who have contributed much to the success of our program.

References

1. Whitehouse, F. A.: Cerebral Palsy and Vocational Habilitation. *Cer. Palsy Rev.* 14:7 (July) 1953.
2. Glick, S. J.: Vocational, Educational, and Recreational Needs of the Cerebral Palsied Adult, New York, United Cerebral Palsy of New York City, 1953.
3. Minnear, W. L.: A Classification of Cerebral Palsy. *Pediatrics* 18:841 (Nov.) 1956.

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PHILADELPHIA for the ANNUAL SESSION,

AUGUST 24-29, 1958

The Intermittent Double Step Gait

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● A gait technic and its two variations that many disabled persons use are described. In the first variation the patient tends to lose his balance abnormally during the stance phase of the disabled leg, and in the second he loses his balance during the swing phase of the involved lower extremity. The patient reacts to the shock of imbalance by pausing immediately after every other step. Because of these aberrations, characteristic and distinctive patterns result. The intermittent double step gait is a method applied successfully, and often found to be the only method, in training some of the severely disabled persons to walk independently and safely. Indications for prescribing the intermittent double step gait are discussed in detail.

The major characteristic of normal gait is an intermittent loss and return of balance.¹ During the swing phase of one leg the center of gravity of the body moves in front of the other or supporting leg, and the body loses balance falling forward. Recovery of balance starts at the moment the heel of the swinging leg touches the floor (that is, the beginning of the restraining part of the stance phase). The following swing of the other leg is correlated once again with the mild loss of balance of the opposite and now supporting leg. Balance recovery again begins at the moment the heel of the swinging leg strikes the floor.

In many instances of pathological gait the functions of only one lower extremity are impaired, and cause an abnormal degree of loss of balance with every other step. The patient immediately stops moving forward in order to overcome the abnormal loss of balance. He resumes his walking after the short pause and takes another two steps which once again are followed by the needed pause. In such a way a distinctive gait pattern develops, which is called, in this paper, the intermittent double step gait. There are two variations of this special gait.

The patient who shows the first variation, the most common one, will lose his balance abnormally while putting weight on the involved leg, that is, during the stance phase of the disabled lower extremity.

The patient who demonstrates the second variation of the intermittent double step gait will lose his balance during the abnormally slow swing of the affected limb. This loss of balance may

be attributed to the delay in commencing the restraining phase by the involved leg. The patient reacts to the shock of imbalance by pausing, just as he does in the first variation.

During the first variation of the intermittent double step gait, the patient pauses at the end of the swing phase of the good extremity. During the second variation the patient pauses at the end of the swing phase of the involved extremity.

The intermittent double step gait is characteristic of many hemiplegic patients.^{2,3} It is almost always seen with elderly patients who have a fractured hip and use a three-point crutch gait,⁴ and it is a classical gait pattern for the patient who has learned to walk despite an ununited fracture of the hip.⁵ Often patients with bilateral involvement, but with one side more involved than the other, choose to walk with an intermittent double step gait.

The two patterns of the intermittent double step gait are usually characteristic of only moderately involved patients. They have been accepted by the patients subconsciously and are a good automatic adjustment to their disability. It is often the safest gait some individuals are able to produce. However, these two variations of gait should be utilized frequently as practical patterns to teach some severely handicapped patients to walk safely.

It is my experience that many severely involved hemiplegic patients would never have learned to walk without assistance or close supervision if they had not been taught to imitate the intermittent double step gait of the less severely involved hemiplegic patients.

The following is a more detailed description of some of the characteristics of

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the first variation of the intermittent double step gait. For simplicity of description, hemiplegic patients have been chosen as examples.

Stages of Progression from Intermittent to Nonintermittent Pattern

For the patients who demonstrate the first variation there are three stages in the progression from the intermittent double step gait to an ordinary nonintermittent pattern.

First Stage. At the end of the intermittent pause the patient starts with the hemiplegic leg slightly behind the good one and the cane, which is, of course, in the good hand, in a forward and lateral position; that is, at an angle of 45 degrees from the sagittal and coronal planes of the patient's body. He then executes the typical double step, first with the involved leg followed by the swing of the good leg. He completes the pattern by placing the cane again in the position described above and pauses to recover his balance.

The functions of the involved leg are predominantly passive. It plays the role of a more or less unstable supporting pegleg during the pause when the balance of the whole body is distributed between the good leg and the cane held in the good hand. Similarly during the swing phase of the good leg, while the weight is borne on the involved leg, the fine balancing functions of the involved leg are taken over by the good hand leaning on the cane.

Before this first stage pattern of ambulation becomes safe, the patient must learn during the training period to overcome two adverse features. Most dangerous is the tendency of many patients to continue the forward movement of their trunk while the supporting extremities are at stance and are fixed to the ground. The patient must learn to make a complete stop including the arrest of the forward movement of the trunk. This is the key solution to the problem of training severely disabled patients to use the intermittent double step gait.

Less dangerous is the tendency of some patients to interrupt the beginning of the full stop with a short forward pull-up of

the involved leg to a more convenient position of rest. This tendency to pull the involved leg along at the initial part of the swing phase in a separate additional movement is an adjustment to the above-mentioned forward movement of the trunk and to the originally poor distribution of both rhythm and space, and is gradually automatically corrected by the patient without the necessity of drawing his attention to the problem.

Second Stage. When the patient has achieved more stability and better balance he begins with the cane in the lateral position rather than at the original angle. The pattern of movement then is to advance the cane first, stabilize it, and then execute the typical double step. It is by virtue of his improved stability that the patient can finish this pattern with the cane at his side rather than forward and laterally as in the first stage.

In the first stage the movement of the cane is the last episode before the complete intermittent pause. In the second stage of progress the movement of the cane is the first episode preceding the double step.

Third Stage. Further improvement in balance and self-confidence permits the patient to move his hemiplegic leg and his cane forward simultaneously and proceed later with a swing-through of the good leg. He then hesitates for a moment. This stopping, after every other step, becomes shorter and shorter until in some patients it disappears entirely.

According to the degree of the patient's disability, his progress may cease at any one of the stages described above, and this will then become his permanent characteristic gait pattern. Severely involved hemiplegic patients who lose their balance easily and are not able to walk without assistance or close supervision are taught only the first stage. Their progress to the next stages is left to their own ingenuity.

The second variation of the intermittent double step gait can similarly be subdivided, as above, into three stages of progression from the intermittent double step gait to an ordinary nonintermittent pattern.

Discussion

A number of factors and conditions tend to influence the patient's balance and serve to indicate which variation of gait should be chosen for his training. The contributing problems include spasticity, an unstable knee due to prolonged flaccidity in hemiplegic patients, osteoarthritis of the hip, knee flexion disorders, and similar complications. Often an analysis of the patient's problems will permit us to prognosticate and to decide *a priori* in which of the two variations of the intermittent double step gait the severely disabled patient should be trained for his eventually permanent pattern. Occasionally a clinical analysis of the problems influencing the patient's gait and stability cannot be accomplished; in such cases the patient is assisted in ambulation, first using one variation several times and later the second variation. Clinical experience and the patient's own preference will permit the physician to decide finally which variation should be used in training the patient.

The most suitable persons for training with the intermittent double step gait are hemiplegic patients with marked spasticity or with prolonged flaccidity, those with cerebellar tract involvements, and bilateral hemiplegics. Many patients with hypertensive encephalopathy, and consequently having a multitude of sub-clinical cerebral vascular accidents but perhaps only one "mild" major stroke, profit markedly from learning to walk with the intermittent pause. Some mul-

tipale sclerotic patients also fall into the same category.

Summary

A gait technic and its two variations that many disabled persons use are described. In the first variation the patient tends to lose his balance abnormally during the stance phase of the disabled leg, and in the second he loses his balance during the swing phase of the involved lower extremity. The patient reacts to the shock of imbalance by pausing immediately after every other step. Because of these aberrations, characteristic and distinctive patterns result. The intermittent double step gait is a method applied successfully, and often found to be the only method, of training some severely disabled persons to walk independently and safely. Indications for prescribing the intermittent double step gait are discussed.

References

1. Steindler, A.: *Kinesiology of the Human Body under Normal and Pathological Conditions*, Springfield, Ill., Charles C Thomas, Publisher, 1955.
2. Peszczynski, M.: Ambulation of Severely Handicapped Hemiplegic Adult. *Arch. Phys. Med.* **36**:634 (Oct.) 1955.
3. Peszczynski, M.: Prevention of Falls in Hemiplegic Patient. *Geriatrics* **11**:306 (July) 1956.
4. Peszczynski, M.: Rehabilitation of Elderly Patient with Pinned Fracture of Hip. *J. Chron. Dis.* **3**:311 (Mar.) 1956.
5. Peszczynski, M.: The Fractured Hip in Hemiplegic Patients. *Geriatrics* **12**:687 (Dec.) 1957.

The Society for Clinical and Experimental Hypnosis, an international scientific society, comprised of physicians, dentists and psychologists engaged in the clinical use of hypnosis, will present an outstanding scientific program in Chicago at the Morrison Hotel, October 29-31, 1958. Immediately preceding the annual meeting of the Society for Clinical and Experimental Hypnosis, the Institute for Research in Hypnosis of the Long Island University Postgraduate School will present its Annual Workshop in Clinical Hypnosis, October 27-29, at the Morrison Hotel.

For a copy of the program and more detailed information, write to the Administrative Secretary, Society for Clinical and Experimental Hypnosis, 750 N. Michigan Ave., Chicago 11.

Lower Extremity Prostheses for Patients Past Fifty

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and
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Buffalo

● This paper discusses the requirements which a patient must meet before any type of prosthesis can be prescribed. Included is an evaluation of the component parts that make up a specific prosthesis to meet the needs of the amputee past the age of fifty. Finally, whenever a patient needs a replacement or an additional prosthesis, what factors must be met to give the patient an adequate prosthesis are mentioned.

This is a study of a group of patients past 50 years of age who, in order to live, must sacrifice either a part, a whole, or more than one of their limbs (see table).

The problems here are: (1) What criteria are essential for proper care of this type of patient? (2) What steps must be taken both by the physician and the patient to have a well-planned program to attain the best possible results?

Patient's Condition

The following criteria are essential for patients past 50 years, who will undergo elective amputation surgery:

1. Patient's general physical status, with particular emphasis on the cardiovascular system.
2. Peripheral vascular status.
3. Patient's mental ability to comprehend simple instructions, and ability to retain what he has been told or learned recently.
4. Adequate sensory components to make ambulation and elevation a safe procedure. This includes examinations of proprioceptive sensation and eye examination.
5. Careful evaluation of body metabolism for such deficiencies as diabetes, adrenal insufficiency, and thyroid dysfunction.
6. Evaluation of emotional stability, especially fear and anxiety.
7. Evaluation of osseous structures, as well as joints and both upper and lower extremities.
8. Evaluation of situation or place where patient will reside after his amputation.

Site of Amputation

The site of amputation depends on the amount of circulation available to the site, condition of joints of that extremity, and anticipated ability for tissues healing. Two or three sessions are essential with the patient and the family prior to surgery, to prepare him to accept the best site of amputation. We prefer a site 5 to 7 inches below the knee, if possible, or approximately 3 inches above the knee, if below-knee amputation is not feasible. For a patient at this age we have a greater concern for leg leverage and conservation of cardiovascular as well as pulmonary reserve. The more we work with the elderly amputee, the less we become concerned about end-bearing stumps. We feel that proper weight bearing should be distributed over large areas of flesh and bone and that bony prominences should be used to help stabilize the selected appliances.

Postoperative Preparations

The use of pillows under knees or hips is discouraged usually 24 to 48 hours after surgery. The use of sedatives and narcotics is discontinued as soon as feasible postoperatively. This is based on the fact that the elderly individual has a high threshold of pain tolerance and does well on small doses of narcotics and sedatives, thus cardiac and pulmonary function are not disturbed. This factor is very important in keeping the patient mentally alert to move in bed and do bed exercises. Sodium salicylate should be substituted to help reduce sedatives and narcotics.

Read at the Thirty-fifth Annual Session of the American Congress of Physical Medicine and Rehabilitation, Los Angeles, September 12, 1957.
Chief, Physical Medicine and Rehabilitation Service, VA Hospital.
Chief, Physical Medicine and Rehabilitation Service, E. J. Meyer Memorial Hospital.

For those patients who have had drainage in the stump, or have undergone a guillotine operation, Hubbard tank therapy is introduced usually the first week postoperatively. This is followed by underwater exercises. In our experience, elderly patients who have been treated with hydrotherapy, using the Hubbard tank or whirlpool, did better than those using local soaks, infrared lamps, dry dressings, or similar therapy. Part of this improvement may be attributed to moving from bed to cart to tank, and back to bed.

For patients dwelling on phantom pain, explanation of this phenomenon and outlining its progress is very useful in hastening recovery. We also have found that the majority of amputees in this group generally have less phantom pains, and this phenomenon does not last as long as in a younger group. Ultrasound has been found to be an outstanding therapeutic tool for pain relief. A series of 5 to 20 treatments (at 0.5 watts per square centimeter) of 5-minutes duration applied over the stump alone or in combination with root sounding of the involved paralumbar area has solved most phantom pain problems.

Once the patient can move around in bed, he is encouraged to sit up in bed. At this time it is essential that the bed be of such height that the patient can put his good foot onto the floor, can transfer from bed to sit in a chair, and, as soon as possible, can go to physiotherapy in a wheelchair to learn to balance in the parallel bars. The two biggest problems in the parallel bars for the older amputee are the impairment of the sense of equilibrium and the fear of falling.

Once these problems are worked out, walking with crutches provided with rubber suction tips is not a problem. If more time is spent during the balance phase in parallel bars, less time will be necessary in the teaching of crutch walking later on.

As soon as healing is well on the way a 6-inch elastic bandage, elastic shrinker, or leather shrinker is applied to the stump of the below-knee amputee. A 6-inch elastic bandage or an elastic stump

sock is recommended for the above-knee amputee. It is important that the stump be kept shrunk 24 hours a day for several weeks, with the bandage being changed three times daily. Great care must be taken not to bandage too tightly, especially in the peripheral vascular disease patient.

As soon as healing of the stump takes place, even though some edema may be present, a training pylon may be introduced. This may take place as soon as three weeks postoperatively. Only one patient in our series had a breakdown with a stump after a pylon was started four weeks postoperatively.

Selection of Proper Appliances

Pylon. From the criteria of patient's condition mentioned before, it becomes obvious that a number of special problems will be encountered which make the immediate provision of a final limb a doubtful, hazardous, costly and, on occasion, even a dangerous procedure. In such cases the use of a preliminary device, together with an adequate training period, is indispensable. It gives the opportunity of observing the amputee in a situation comparable to "on-the-job-training," where the "job" happens to be learning to walk with an artificial device. Corresponding to those criteria offered before, some of the special problems can be grouped approximately as follows:

1. The cardiovascular amputee with fibrosis or emphysema of the lungs, an angina syndrome, muscular or coronary insufficiency symptoms, necessitating digitalis or bishydroxyloumarin (Dicumerol) maintenance, or other complications must be studied under stress conditions of the training program.

2. The patient with peripheral vascular disease with inefficient circulation in his remaining lower extremity, such as missing foot pulses, popliteal pulses, blanching, rubor, coldness, clamminess, and other signs of disturbed peripheral arterial or venous circulation, must be carefully observed.

3. The victim of cerebral arteriosclerosis with restricted sensory abilities, proprioceptive or central deficiency, and

loss of balance, memory, comprehension, attention span, or retaining power becomes a special problem.

4. The diabetic whose insulin-food balance has to be adjusted to the increased muscular activity must be watched carefully.

5. The emotionally unstable, badly motivated amputee with lack of insight, and, above all, fear, must be given a chance to prove himself.

6. The hemiplegic with an amputation on the potentially "wrong" side ("wrong" is used here in relation to the function of ambulation and not in relation to anatomy or pathology) must be observed for some time before a final decision can be made as to type of apparatus best suited to him. There are many factors involved here, the predominant ones being spasticity of the hemiplegic side and/or peripheral vascular insufficiency of the contralateral extremity.

This, by no means, exhausts the list. It is intended only to draw attention to the multifarious problems involved with the amputee past 50 years of age. For such amputees the "pylon stage" in the training seems absolutely necessary.

We use four types of pylons in this "intermediate" stage:

1. A leather bucket terminating below the knee in a wooden or aluminum shaft, the end of which is covered with a large rubber tip.
2. A leather bucket with medial and lateral bars terminating in a wooden or aluminum shaft with locks at the knee and a rubber tip.
3. A light weight elastic bucket which can be molded to the stump very accurately. Its hardness and high resistance to tearing and shearing forces make it perhaps particularly safe (fig. 1 and 2).
4. Any one of the above described, but with a fixed foot attached to the end instead of a rubber tip (fig. 3).

Differences between above-knee and below-knee pylons are principally the same as in the final prosthesis.

A. Above-knee pylon

- (1) Has a hip joint and a pelvic band.
- (2) Knee joint has a glide lock making flexion at the knee possible when sitting.
- (3) The bucket very often has an ischial seat.

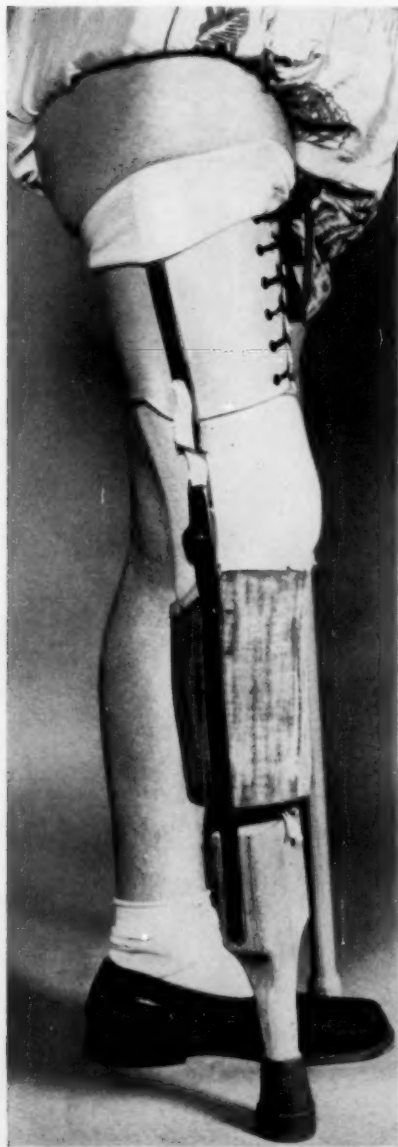


Fig. 1 — Pylon with elastic bucket terminating below the knee in a wooden shaft, the end of which is covered with a large rubber tip.

B. Below-knee pylon

- (1) Has a thigh corset with or without ischial seat extension.
- (2) The knee lock is usually kept unlocked, but is provided in case the patient needs a locked knee at the beginning of training for stability and security.

C. Additional mechanical aids are provided if needed individually, such as a kicker strap (pelvic attachment) for support of full extension and others.

Aside from the advantage these intermediary devices offer to both the therapist and physiatrist in terms of testing and observation of the reaction to training, they also have practical advantages as follows:

1. Reasonable in price.
2. Simple to produce.
3. Short period of production.
4. Easy to learn to walk with since they have no movable parts at knee and/or ankle.
5. Light in weight.
6. Best and quickest method of stump shrinkage.
7. Develop or restore sense of balance.
8. Easy transition from pylon to final prosthesis, usually within 24 to 48 hours.

Patients who do not do well with a "training" pylon or in whom the prognosis (for example, in peripheral vascular disease) is in doubt, can continue with or without the attachment of a foot for mechanical (wider walking surface) or cosmetic reasons. Re-evaluation of such patients is advisable every three months.

When the patient at the end of one year shows very little progress or change, the pylon is continued and may be re-ordered when worn out. On the other hand, the patient who wears the pylon well, had no detrimental effects otherwise, and expresses a desire for a prosthesis, is then provided with one.

Prosthesis. A prosthesis is recommended for the individual who can do a swing to or swing through gait with crutches, with little fear and good bal-

ance. Generally, for the below-knee amputee either a leather-covered hard socket or a double slip socket prosthesis is indicated, depending on the patient's general condition and sensitivity to weight bearing. The bucket, regardless of whether it is made of wood, fiber, metal, or plastic, must be well shaped and must fit the stump well. However, the weight bearing is distributed over a

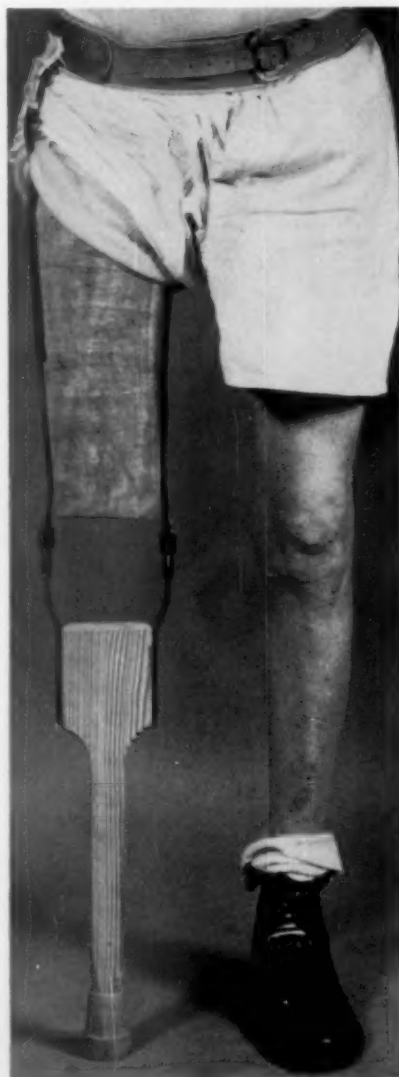


Fig. 2—Pylon with light weight celastic bucket which can be molded to stump.



Fig. 3 — Pylon with fixed foot instead of rubber tip.

large area — 40 per cent below knee and 60 per cent above knee. The thigh corset usually is to extend high on the thigh. For the above-knee amputee, we prefer the ischial bearing or the gluteal bearing type of prosthesis. The quadrilateral type of bucket is more desirable than the plug type. We have found that the ischial bearing type of prosthesis is much more desirable than the gluteal bearing type. In the older age group of patients, a great deal of attention is paid to the knee joint. It is rarely that we provide no safety device for the knee. We use the outside lock in many cases because it costs less than other devices. Wherever practical and financially allowable, the Bock knee is preferred. We introduced the use of the Bock knee $2\frac{1}{2}$ years ago in our clinic, and feel that the patient who has been wearing an apparatus with this type of brace is happier and safer than the patient wearing other types of knee devices. Attention should be paid to the ankle joints. Any ankle joint that provides any other motion except limited flexion and extension of the ankle is not desirable.

The question of how to stabilize the prosthesis close to the body is not settled too well. At the County Hospital one

Survey of Amputees Past 50 Years of Age at the E. J. Meyer Memorial Hospital
— January, 1953, to January, 1957

Age Group	No.	Arterial Insufficiency	Diabetes	Accidents	Prosthesis	Pylons
55 to 64						
Above knee	24	12	8	4	4	6
Below knee	10	..	6	4	5	..
65 to 74						
Above knee	23	11	12	..	4	1
Below knee	6	3	3	..	3	..
Bilateral above knee ..	1	1	..	..	1	..
Above knee and below knee	1	..	1	..	1	..
75 to 84						
Below knee	2	1	1	..	1	..
Above knee	8	4	4	..	3	1
Bilateral above knee ..	2	..	2	..	1	..
Above knee and below knee	1	..	1	..	..	..
85 to 94						
Above knee	4	3	1	..	1	..
Totals	82	35	39	8	24	8

third of the amputee patients who came in for a replacement prosthesis show a preference for suspenders. This is only true of those who had worn suspenders previously. The above-knee amputee who is being provided with the first prosthesis usually accepts the pelvic belt and hip joint with no complaints. Those who had pelvic bands previously and were having replacement prosthesis invariably wanted a pelvic band. Those patients who had suspenders for their prosthesis and accepted our suggestion to change and wear a pelvic belt rather than the suspenders, with the understanding that, if they were not satisfied with this arrangement, a suspender would be provided, appeared to be satisfied with the exception of one, who reverted to the suspender.

Training Patients to Use Lower Extremity Prosthesis

As pointed out before, we like to start our patients walking on pylons correctly about three or four weeks after amputation, and then graduate into a prosthesis, if this is feasible. This may be done as early as four months or as late as two years after the amputation has taken place. Training of the patient should always take place under direction of a competent physical therapist and, wherever possible, in close cooperation with the rehabilitation nurse. We have found that amputee patients who have had previous experience with the pylon adapt themselves more readily to the prosthesis than those who start off wearing the

prosthesis initially. They require fewer adjustments and complain of less discomfort. A "faulty" gait pattern caused by pylon walking has not been encountered.

Since most geriatric cases fall into the class of selective surgical procedures, the physician in charge has the responsibility to evaluate the patient physically, mentally, socially, and, in some cases, economically, before any surgical procedure is undertaken. He must also be cognizant of the value of medical consultants and other types of consultants dealing with health problems related to any surgical procedure. He must be ready to prepare for the postoperative and preprosthetic program himself, or delegate it to an available training center. This, then, is followed by proper selection of the type of apparatus best suited to the particular patient's needs and a period of training in the use of this appliance.

If the above procedures are carried out carefully and adequately, then the geriatric patient receives maximum benefit. If, on the other hand, any of the above-mentioned procedures are omitted, or inadequately carried out, the patient may have many problems which might not be resolved after he is provided with a prosthesis.

Acknowledgment: We wish to express our appreciation to Walter Givens, Chief of the Physical Therapy Unit, U. B. Chronic Research Institute; Mrs. Helen Kabel, Rehabilitation Nurse, E. J. Meyer Memorial Hospital, and Roland Daniels, Consultant in Prosthetics and Orthopedic Appliances at U. B. Chronic Disease Research Institute who helped compile material for this paper as a cooperative project between U. B. Chronic Disease Research Institute, E. J. Meyer Memorial Hospital and the Buffalo VA Hospital. We are also grateful to Mr. Harold Bultz, for the excellent slides and picture material he contributed to this study.

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Some Help in the Drafting of a Physical Therapy Law

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● A study of physical therapy laws now in effect resulted in the "guide law" prepared by the American Registry of Physical Therapists. Close study of the material presented will indicate that one provision or another may be more suitable in a given state and for that reason explanatory notes are appended to certain sections of the "guide law."

Following numerous requests from physical therapists who are registrants of the American Registry of Physical Therapists and from doctors of medicine specializing in physical medicine and rehabilitation, the Board of the American Registry of Physical Therapists authorized a study to be made and material prepared that would be suitable for the preparation of a so-called guide law that would be available to assist those who have the task of drafting laws defining and regulating physical therapy in the various states.

In the preparation of the so-called guide law, the physical therapy laws already in effect in the respective states were studied and the material presented at the end of this article is the result of those research activities.

It was not the intention of the Board of the American Registry of Physical Therapists to prepare any material that must be rigidly followed but on the contrary it was the hope of the Board and the officers of the Registry as well as the administrative staff and legal counsel to prepare a detailed outline that would be helpful in resolving the various problems that arise when proposed legislation is considered.

The Board believes that there are several necessary ingredients to such a law and they can perhaps be best summarized as follows: a definition of physical therapy; selection of a state agency responsible for the registration of physical therapists; enumeration of the various details relative to such appointments, terms of office, vacancies and etc.; officers, duties and compensation of such

state agency; qualification and examination of applicants for registration under state law; registration without examination; annual renewal of registration and fees therefor; refusal, suspension or revocation of certificate of registration; restriction of designation of physical therapist to authorized persons; and, penalties for violation of the law. Each of these will be found in the guide law.

The Board of the American Registry of Physical Therapists recommends the use of the State Board of Medical Examiners as the state agency for registration of physical therapists for several reasons — the first one being the necessity for economy and the avoidance of the increasingly high expense of attempting to maintain a separate registration agency in the respective states. Experience has demonstrated that where the State Board of Medical Examiners has been selected as the state agency to register physical therapists the work can be done with a reasonable examination fee and a modest annual registration fee. In addition the work of the physical therapist is very closely allied with the services of doctors of medicine and in most states a sympathetic and sincere interest has been manifested by everyone concerned in having the law administered at a level that is compatible with the dignity and best interests of the public, the physical therapists and the medical profession. It has also been found by those states that have followed the procedure outlined that the many years of experience in medical licensure enable such boards, with the technical assistance of a State Examining Committee of Physical Therapists, to take on the additional work of

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Chairman, Board of the American Registry of Physical Therapists.

state registration of physical therapists without any undue burden or expense to anyone.

The Board wishes to stress the importance of a provision in any state registration law for physical therapists of granting discretionary power to the state agency of granting registration without examination to a physical therapist who has been found qualified after examination by the American Registry of Physical Therapists. The American Registry has had more than 20 years of experience in conducting such examinations and the Board believes that they are competently and fairly conducted. We are advised that those states that have followed that procedure are very happy with it. It has also meant a saving of time and expense for the physical therapist.

A study of the material submitted herewith will indicate that one provision or another may be more suitable in a given state and for that reason notes are appended to the guide law at the end of certain sections. The sole desire of the

Board of the American Registry of Physical Therapists is to be specific in its suggestions and to offer assistance to those seeking help in this area.

The enactment of such legislation, in our opinion, is neither simple nor easy. It requires cooperation between the physical therapists, the medical profession and those lawmakers who have a genuine interest in protecting the welfare of the patient by restricting the field of physical therapy to those who are properly qualified.

Within its capacity and ability to do so the Board of the American Registry of Physical Therapists, its officers, administrative staff and legal counsel are willing to assist in the solving of this problem in the various states when requested to do so. Copies of the proposed guide law may be obtained at the office of the American Registry of Physical Therapists, 30 North Michigan Avenue, Chicago 2, Illinois. Any other correspondence relative to the subject may also be addressed to that office.

AN ACT DEFINING AND REGULATING PHYSICAL THERAPY, PROVIDING FOR EXAMINATION AND REGISTRATION OF PHYSICAL THERAPISTS, BY THE STATE BOARD OF MEDICAL EXAMINERS, PROVIDING FOR THE APPOINTMENT OF AN EXAMINING COMMITTEE, PROVIDING FOR THE ENFORCEMENT OF THE PROVISIONS OF THIS ACT, AND PRESCRIBING PENALTIES FOR THE VIOLATION OF THE PROVISIONS THEREOF.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF _____

Section 1. DEFINITIONS. Subdivision 1. Physical Therapy. As used in this act, the term "physical therapy" means the treatment of any disability, injury, disease or other condition of health of human beings, or the prevention of such disability, injury, disease or other conditions of health and rehabilitation as related thereto by the use of the physical, chemical and other properties of air, cold, heat, electricity, exercise, massage, radiant energy, including ultraviolet, visible and infra-red rays, ultrasound, water and apparatus and equipment used in the application of the foregoing or related thereto. The use of Roentgen rays and radium for diagnostic and therapeutic purposes, and the use of electricity for surgical purposes, including cauterization, are not authorized under the term "physical therapy" as used in this act.

Subdivision 2. Physical therapist. "Physical therapist" means a person who applies physical therapy as defined in this act upon the prescription, and under the direct supervision, of a person licensed and registered in this state to practice medicine and surgery and whose license is in good standing.

Note: It is the opinion of the Registry Board that the requirement of a prescription of a doctor of medicine and direct supervision of a licensed doctor of medicine are necessary and proper requirements.

Section 2. DUTIES OF STATE BOARD OF MEDICAL EXAMINERS. The State Board of Medical Examiners, as now or hereafter constituted, hereinafter termed the "Board," in the manner hereinafter provided, shall administer the provisions of this law.

Section 3. EXAMINING COMMITTEE. There is hereby created a State Examining Committee for Physical Therapists to assist the State Board of Medical Examiners in carrying

out the provisions of this law, regarding the qualifications and examination of physical therapists. The Examining Committee shall consist of five members, citizens and residents of the State of _____, three of whom shall be physical therapists and two of whom shall be licensed and registered doctors of medicine.

Note 1: The Registry Board recommends that in those states where it is possible, one of the doctors of medicine be a professor or associate or assistant professor in a course in physical therapy approved by the state board of medical examiners of that state.

Note 2: The Registry Board believes that because of the opposition of many Legislatures to the creation of more examining boards, the plan proposed in Sections 2 and 3 is the most economical and practical. If not legally possible in a given state, the Registry Board recommends that the Examining Committee be set up as a separate entity, with three physical therapists and two doctors of medicine as the members.

Section 4. MEMBERS; TERMS; APPOINTMENT; VACANCIES. The Governor, by and with the advice and consent of the Senate, shall appoint the members of the State Examining Committee for Physical Therapists for a term of five years. The first appointments shall be made as soon as may be after this act takes effect. The terms of office of the members first appointed shall begin when they are appointed and qualify and shall continue thereafter for the following periods: one member for one year; one member for two years; one member for three years; one member for four years; one member for five years, the terms to end June 30 of the respective years. Upon the expiration of such terms and of all terms thereafter the governor shall appoint a successor to the member whose term expires, for a term of five years. For each of the above terms of physical therapists of the State Examining Committee for Physical Therapists, and at least 30 days prior to the expiration of each of said terms, and for any such vacancy thereafter occurring, the governing body of the (name of state) chapter of the American Physical Therapy Association shall recommend to the Governor three physical therapists qualified to serve on said State Examining Committee for each such term of vacancy to be filled, and from said list of persons so recommended, the Governor may appoint one member to said State Examining Committee for each such place to be filled. In the same manner, the (name of state) State Board of Medical Examiners shall recommend to the Governor three doctors of medicine qualified to serve on said State Examining Committee for each place to be filled by a doctor of medicine, and from said list of persons so recommended the Governor may appoint one doctor of medicine to said State Examining Committee for each such place to be filled. After the appointment of the first state examining committee, each physical therapist appointed thereto shall be a duly registered physical therapist, shall have had not less than three years experience in physical therapy immediately preceding his appointment, and shall be actively engaged, in this state, in physical therapy during his incumbency. Each doctor of medicine appointed to said State Examining Committee shall be duly licensed and registered to practice medicine and surgery in this state, and shall have had not less than four years actual experience in the practice of medicine and surgery. Vacancies in said State Examining Committee shall be filled by appointment by the Governor as provided above within 60 days after such vacancy occurs, for the balance of the unexpired term and each member shall serve until his successor qualifies. Each member of the State Examining Committee, before entering upon the discharge of his duties shall take, subscribe and file with the secretary of state, the oath of office prescribed by the constitution.

Note 1: Some expiration date for the terms of office, other than June 30 in each year may be desirable, depending on the State's fiscal year or for other reasons.

Note 2: If for any reason, the State Examining Committee is set up as a separate agency and not in conjunction with the State Board of Medical Examiners, the Registry Board recommends that the respective state medical associations make the recommendations to the Governor of the doctors of medicine to serve on the State Examining Committee.

Section 5. OFFICERS — DUTIES — COMPENSATION. Within 30 days after the appointment of the members of the State Examining Committee for Physical Therapists provided for in Section 3 of this act, they shall elect from their members a president, a vice-president, and a secretary, who shall each serve for one year or until their successors are elected and qualified. The State Examining Committee shall serve in an advisory capacity to the State Board of Medical Examiners in matters pertaining to physical therapists, and which State Board of Medical Examiners shall have authority to prescribe reasonable rules and regulations relative to the qualification and examination of applicants as may be found necessary for the performance of its duties. As to any matters coming under its jurisdiction, the State Examining Committee in session may take such testimony as it may deem necessary in the exercise of its powers and the performance of its duties under the provisions of this act, and any member of said Committee shall have the power to administer oaths in the taking of such testimony. A simple majority of the Committee shall constitute a quorum for the transaction

of business. The secretary shall keep a record of all proceedings of said Committee. Said Examining Committee shall meet at _____, and under the direction of the State Board of Medical Examiners, there conduct the examination for the registration of physical therapists at least once each year, and may hold other meetings and examinations at such times and places as the Examining Committee and Board shall determine. The Examining Committee shall make recommendations to the Board concerning rules and regulations governing examination of, and registration of physical therapists, for its approval. The Board may appoint and fix the compensation of such employees as may be necessary to assist the Examining Committee and the said Board shall have the power to employ such expert assistance at it may deem necessary to carry out the purposes of this act. The compensation of each member of said Examining Committee shall be \$15 for each day actually spent in the performance of his duties, together with actual necessary expenses payable out of the funds of the Board, as approved by said Board.

Note 1: The meeting place for examinations should be specified in the law according to what best serves the needs of each state. The Registry Board believes there is an advantage in stating the place (University or city) in the law.

Note 2: The amount of compensation for members of the Examining Committee is merely a suggestion. It should be set at a figure that is appropriate for the particular state.

Section 6. APPLICANTS — QUALIFICATIONS — EXAMINATIONS. It shall be the duty of the State Board of Medical Examiners with the advice and assistance of the State Examining Committee to pass upon the qualifications of all applicants for examination and registration, provide for and conduct all examinations, determine the applicants who successfully pass the examination, and duly register such persons. A person who desires to be registered as a physical therapist and who

- (a) is at least 21 years of age;
- (b) is a citizen of the United States of America or who has filed a declaration of intention to become a citizen and having made such declaration of intention, has filed a petition for naturalization within sixty days after becoming eligible to do so;
- (c) is of good moral character;
- (d) has successfully obtained a high school education or its equivalent, as determined by the Board, and,
- (e) has been graduated by a school of physical therapy approved by the Board for training physical therapists, may make application on a form furnished by the Board, for examination for registration as a physical therapist as defined in this act. In determining whether or not such approval shall be given, the Board may take into consideration, the approval or nonapproval of such schools by the appropriate Council of the American Medical Association or of the Canadian Medical Association, if any, at the time of applicant's graduation, or if graduated prior to 1936, the school or course was approved by the American Physical Therapy Association, at the time of graduation. Such examination shall embrace the following subjects: the applied sciences of anatomy, neuroanatomy, kinesiology, physiology, pathology, psychology, physics, physical therapy as defined in this act, as applied to medicine, neurology, orthopedics, pediatrics, psychiatry, surgery; medical ethics; and technical procedures in physical therapy as defined in this act, and such other subjects as the Board may determine to be necessary. At the time of making such application, the applicant shall pay to the Board a fee of \$_____, no part of which shall be returned.

Note: The Registry Board suggests that the application fee be sufficient to cover the expense of the work, including the examination expense and the per diem of the Examining Committee. This may require a fee of \$15, \$20, or even \$25 or more.

Section 7. REGISTRATION. The State Board of Medical Examiners shall register as a physical therapist, and shall furnish a certificate of registration to each applicant who successfully passes the examination provided for in this act for registration as a physical therapist, and who is otherwise qualified as required herein.

Section 8. EXAMINATION. When not required. Subdivision 1. The State Board of Medical Examiners may register as a physical therapist, and may furnish a certificate of registration without examination to a physical therapist who applies for such registration on or before December 31, 19____, and who at the time of the passage of this act, meets the qualifications for a physical therapist as set forth by the American Registry of Physical Therapists, and who, at the time of passage of this act is actually engaged in physical therapy in this state, and who is otherwise qualified as required herein. At the time of making such application, such applicant shall pay to the Board a fee of \$_____, no part of which shall be returned.

Note 1: Fill in year applicable to section. The Registry Board suggests that the time to apply be limited to six months from the passage of the law if a date other than December 31 is desirable.

Note 2: The Registry Board makes the same suggestion as to the amount of the fee as made in Section 6. Because of the amount of work involved in investigation, the fee could be slightly larger than the fee in Section 6.

Subdivision 2. Certificate of registration — reciprocity. Said Board may issue a certificate of registration in physical therapy without examination therein to an applicant who presents evidence, satisfactory to the Board, of having passed the examination in physical therapy of the American Registry of Physical Therapists, or an examination before a similar, lawfully authorized examining board in physical therapy of another state, District of Columbia, territory or foreign country, if the standards for registration in physical therapy in such other state, district, territory or foreign country are determined by said Board to be as high as those of this state. At the time of making such application, the applicant shall pay to the Board a fee of \$_____, no part of which shall be returned.

Note: The Registry Board makes the same suggestion as to the amount of fee as made in Section 6. Because of the time spent in checking outstate and foreign credentials, the fee should be slightly higher than the fee in Section 6.

Section 9. RENEWALS. Every registered physical therapist shall, during the month of January 19____, and during each January thereafter, apply to the Board for an extension of his registration and pay a fee of \$_____. Registration that is not so extended on or before January 31, each year, shall automatically lapse on said date. The Board, in its discretion, may revive and extend a lapsed registration upon the payment of the full amount of the delinquent fees.

Note 1: The Registry Board points out that the amount of annual registration should be sufficient to carry the cost of the work involved. It is recommended that annual registration be not less than \$3 and perhaps \$5 or more.

Note 2: Some other month may be more convenient for renewal of registration.

Section 10. RULES. The Board is authorized to adopt such rules and regulations as may be necessary to carry out the purposes of this act. The secretary of the Board shall keep a record of all proceedings under this act and a register of all persons registered under it. The register shall show the name, address, date and number of the original registration, and the renewal thereof. The Board shall, on or before (date) of each year, compile a list of such registered physical therapists and mail a copy thereof to the State Board of Health and the (county) (district) attorney of each county. Any other interested person may obtain a copy of such list on request to the Board upon payment of such amount as may be fixed by the Board, which amount shall not exceed the cost of the list so furnished. The Board shall provide blanks, books, application forms, register, certificates and such other stationery and assistance as is necessary for the transaction of the business of the State Examining Committee and the Board, hereunder. All money received by the Board under this act shall be paid into the state treasury as provided for by law, to be kept in a separate fund which shall be under the control, and for the use of the Board in carrying out and assisting in the enforcement of the provisions of this act.

Note: Select appropriate designation where applicable.

Section 11. REFUSAL, SUSPENSION OR REVOCATION OF CERTIFICATE. The State Board of Medical Examiners may refuse to grant registration to any physical therapist, or may suspend or revoke the registration of any physical therapist for any of the following grounds:

- (a) habitual indulgence in the use of narcotic drugs or other habit forming drugs;
- (b) excessive indulgence in the use of alcoholic liquors;
- (c) conviction of a felony;
- (d) conviction of a crime involving moral turpitude;
- (e) conviction for violating any municipal, state or federal narcotic law;
- (f) procuring, aiding or abetting a criminal abortion;
- (g) obtaining or attempting to obtain registration by fraud or deception;
- (h) finding by a court of competent jurisdiction that the registrant is a mentally ill person and has not thereafter been restored to legal capacity;
- (i) conduct unbecoming a person registered as a physical therapist or detrimental to the best interests of the public;

(j) failure to file a petition for naturalization within ninety days after becoming eligible to do so, or, if such petition has been filed, failure to become a citizen of the United States of America within six months after such filing.

(k) the treatment or attempt to treat ailments or other health conditions of human beings other than by physical therapy and as authorized by this act;

(l) applying or offering to apply physical therapy independent of the prescription and direct supervision of a person licensed and registered in this state to practice medicine and surgery.

Section 12. USE OF CERTAIN WORDS PROHIBITED. Any person who shall, in any manner, represent himself as a physical therapist, or who uses in connection with his name the words or letters Physical Therapist, Physiotherapist, Physical Therapy Technician, Registered Physical Therapist, P.T., Ph.T., P.T.T., or R.P.T., or any other letters, words, abbreviations or insignia, indicating or implying that he is a physical therapist, without a valid existing certificate of registration as a physical therapist issued to him pursuant to the provisions of this act, shall be guilty of a gross misdemeanor. Provided, however, that nothing in this act shall prohibit any person licensed or registered, in this state, under another law, from carrying out the therapy or practice for which he is duly licensed or registered.

Note: The Registry Board suggests that in those states where it is necessary to specify the punishment for a gross misdemeanor, that appropriate language be added to this section, or a new section added.

Section 13. VIOLATIONS. Subdivision 1. Any person employing fraud or deception in applying for, or securing a certificate of registration as a physical therapist, shall be guilty of a gross misdemeanor.

Subdivision 2. A person registered under this act as a physical therapist shall not treat ailments or other health conditions of human beings by physical therapy except upon the prescription and under the direct supervision of a person licensed in this state to practice medicine and surgery and whose license is in good standing.

Subdivision 3. A person registered under this act as a physical therapist shall not treat ailments or other health conditions of human beings other than by physical therapy unless duly licensed or registered so to do under the laws of this state.

Subdivision 4. Any person violating the provisions of this section shall be guilty of a gross misdemeanor.

Note: If necessary in your state, specify the punishment for a gross misdemeanor.

Section 14. PROSECUTION, ALLEGATIONS. In the prosecution of any person for violation of this act, as specified in Section 12, it shall not be necessary to allege or prove want of a valid certificate of registration in physical therapy, but such matters shall be a matter of defense to be established by the accused.

Section 15. If any provision of this act or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or application of the act which can be given effect without the invalid provision or application, and to this end the provisions of this act are declared to be severable.

Section 16. This act shall be in effect from and after its passage.

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An Experimental Group Approach Supplementing Rehabilitation

Irvin A. Kraft, M.D.
Houston

● An experimental group therapy program was instituted with parents of adult cerebral palsy patients. It attempted to test certain hypotheses about alterations of personality in cerebral palsy patients, especially those with speech handicaps.

Rehabilitation is the third phase of medicine. The first phase is the preventive aspect; the second is the active treatment of the disease process. Rehabilitation is the attempt to restore the individual to the highest degree of social competency in his environment. This paper describes an attempt at supplementing the rehabilitation of the adult cerebral palsy patient by a group approach.

The cerebral palsy patient presents an interesting problem in rehabilitation; yet, in a particular way, he is different since the disability has been a part of his entire personality and growth development. Rehabilitation of other types of patients usually begins after they have had a period of normal life span. It might be said that, for the cerebral palsy patient, rehabilitation starts from birth. Psychological aspects also begin almost from the parent's first knowledge of the deficit in the child. This usually takes place in the initial years of the child's life.

There is a long period of infantilization (ranging from 6 to 20 years) which calls for the utmost skill and patience by the parents. While the ordinary fears and concerns of parenthood are multiplied manifold, the joys are often few or absent. The effects of this chronic stress are bilateral with the parents and child attempting to construct personality defenses with which to carry on. These aspects of the personality play an important role in the rehabilitation of the patient.

There have been some studies of the psychiatric factors involved in rehabilitation, but the main emphasis has been on diminution of the symptoms in the patient.¹ This meant dealing with prob-

lems obstructing rehabilitation and not with the "cure" of mental illness.

Since there is usually a speech handicap in the cerebral palsy patient, it would seem that employment of the customary types of psychotherapy would be quite restricted. These patients have an extended infancy. Some, for example, do not sit up until six years of age. Their formative years of personality development are usually confined primarily to parental contacts. Presumably there would be more reflection of the personality of the parent in the handicapped child as compared with the nonhandicapped child. Characteristics of the parent's personality, therefore, would be more important to the cerebral palsy child, since his opportunities for life experiences by extrafamilial contacts are so limited.

Our premise on the basis of this observation has been to help the cerebral palsy patient through his parents. This is in addition to the superficial psychotherapy the child receives from his physiotherapist and others on the rehabilitation team.

Procedure

A restricted experimental approach was formulated on the assumption that group psychotherapy would be an appropriate method to modify the character traits of the parents. (Some alterations of behavior patterns in the patients might occur in response to those changes which would take place in the parents.) It was understood that few immediate results would be discernible and that further studies would be necessary.

Read at the Thirty-fifth Annual Session of the American Congress of Physical Medicine and Rehabilitation, Los Angeles, September 12, 1957.

Medical Director, Child Study Clinic, Houston Independent School District-Baylor Medical School. This study was completed through the interest and cooperation of the United Cerebral Palsy Association of New Orleans.

The group selected was composed of parents of cerebral palsy patients. The parents averaged 53 years of age for the father and 49 for the mother. There were eleven possible sets of parents or guardians at first and two more later on. The meetings were at night in the cerebral palsy clinic itself, while simultaneously in a nearby room the children met with the medical director and the coordinator, a psychiatric social worker.

There were no preliminary contacts with the parents by the therapist prior to the first session. The group was voluntary. Sessions were held once a month over a six-month period.

Diagnoses in the patient group ranged from mild athetosis to spastic tetraplegia. Occupations of the parents varied considerably and included an insurance agent, utility supervisor, and railroad carman.

An integral part of the group experience is the role which the therapist plays by intent or circumstance and how he sees his own participation in the group interaction. In this project the therapist had prepared for the sessions by perusing each patient's chart and noting the comments written by the various workers about the parents and the parent-patient relationship. The remarks about the parents usually were negative. An attitude of "the patient is always right and the parents wrong" began to manifest itself. A villain-victim tragedy seemed to unfold as the briefing continued. It seemed that the staff desired to act out through the therapist some of their hostile feelings toward the parents.

A knowledge of the background of the cerebral palsy clinic was helpful. These parents had been hard workers in the early drive to organize treatment for the cerebral palsied patient. With the facilities now at hand, their children were adults and not full recipients of the services for which they had striven.

There were also personal factors affecting the therapist. Having been exposed in 1947-1948 to the cerebral palsy patient in the rehabilitation department at Bellevue Hospital, there were both a favorable attitude set to the problem as well as a kind of thankfulness that one's

own kin had not been afflicted. The therapist was familiar with several programs dealing with the rehabilitation of the cerebral palsy patient.

Before meeting the parents, the therapist suggested to the staff that future contacts be at a minimum to avoid fostering additional sources of friction. There was no interchange of data by the therapist and those of the staff dealing with the patient group.

Group Sessions

First Session. At the first session the therapist explored the ideas held by the parents about the group itself. He attempted to orient them to the concept that he was not there to lecture or to give them instructions about their children, but to facilitate the verbal and emotional interchanges which would occur in the meetings.

One might say that the first stage of the group activity was loose and disjointed. The group was cautious and somewhat defensive. They wanted to see who this new doctor was and what the program involved. They were, however, quite willing to work at it. One of the fathers started the first session by saying that he wanted to bring out a problem which had been on his mind for years and which he had never voiced. This dealt with the sexual fantasies of his daughter. He wanted to know how to handle them and whether others had experienced the same problem. He wondered if the other parents had been stirred similarly. This served as a nucleus of discussion during the first meeting and each group member participated. They agreed that the boys presented no serious problem in the sexual area but they expressed concern about the girls. One mother felt that her daughter should not even be allowed to entertain the idea of love and marriage because only trouble could follow. Pregnancy would soon take place and a baby would then be on the grandparents' hands. This mother's child, interestingly enough, was the least handicapped of all the group.

Another father quickly stated that he thought this mother was engaging in

thought control beyond what was required by the situation. He suggested that the child had a right to her own happiness, to whatever degree she could obtain it, including a love relationship. The mother then returned to the point by saying she did not think the cerebral palsy child had a right to this type of happiness owing to the handicap. A veritable storm of debate then arose, because the group had been touched in the basic area of their feelings of guilt.

This led to more intense statements by the parents. An attempt was made by the therapist to suggest to them that perhaps the parents had deep feelings which were not considered positive, but which were very strong in relationship to the children. One of the group gave as an example that perhaps this long period of dependency could produce in the parents a feeling of anger, so that they would have guilt feelings later on when they spoke of such things as denying the child the right to love others.

Second Session. The second meeting resumed topics which had been raised the month before and went on to the question of their angry feelings. In this second session their hostile feelings toward doctors soon began to manifest themselves. It was obvious that the group had restrained itself initially because they wanted to check whether the therapist, a physician, would react in what they considered a typical manner. When the therapist encouraged the expression of their hostility, a torrent of remarks broke loose. Almost everyone in the group had some complaint to make against the medical profession. Most of these complaints emphasized the benefits which were now available but had not been in their struggling days. Yet they were bitter that doctors had not helped their children sufficiently when they were young. This branched out into a discussion of why normal people showed evidence of withdrawal toward the cerebral palsy child. They were concerned also about how the cerebral palsy patient looked at himself. One mother said that she was sure her child looked at himself as being different and apart from others.

Another mother contradicted this by saying that they may feel somewhat different, but actually they tended to feel that there was nothing wrong with them. She pointed out that the cerebral palsy child had a handicap which had been part of his life and would ignore it as much as his parents and reality would permit him. The parents were able to express their hostility toward outsiders who did not seem to understand and appreciate the problems they had in caring for their children. They complained bitterly of the people who stared at the children when they were out in public. After this expression of feeling, a father stated that he felt his son was more at ease with the normal than with the handicapped people. He remarked also that his son was more comfortable with older people than with people his own age.

This parent felt that some parents were too controlling and would not give the child a chance to develop on his own. He used, as an example, allowing the child to fall when he is learning to walk. The cerebral palsy patient tended to fall, even though he might have been in his mid-twenties; this served as a focus for many of the feelings that the parents had about bodily damage.

Third Session. By the third session the parents had begun to deal more with their own feelings to their children. Such matters as whether a child should have an allowance or not brought out many different attitudes and character traits. One mother felt very strongly that the child should not have any allowance. The child had to ask her for money each time it was needed, so that then she would know what the child was going to do. This mother failed to recognize the constant rebellion within her child at this monetary servitude. This raised the question of money for children and then turned to funds for the organization. A flurry of hostility broke out at this point when they talked about the amount of money they had raised by their fund raising activities in the early years of cerebral palsy before joining United Fund. They were very hostile to the parents of young cerebral palsy children. They believed everything was being

handed to them and the younger parents were not appreciative of what these older people had done in the beginning. They believed that these parents should work for what they were getting so that they could appreciate it more fully. It was brought out also that the parents of these younger children failed to anticipate the kind of problems they were going to face in the future. One father, over and over again, emphasized that these parents just were not able to realize the stresses and strains they were going to encounter as time went by.

As an adjunct to this discussion of the local organization, one father soon brought out his feelings toward the national organization. He complained that the local group had given more to the national group each succeeding year and had received nothing in return. They were somewhat paranoid in a group way about the national organization because they all felt that their efforts had not been reciprocated.

Fourth Session. By the end of the fourth meeting the group had some unity. This came out when a new person applied for admission to the group. They questioned this person's qualifications to be admitted and showed a great deal of resentment toward her. Part of this was realistic, but a great deal of it was on the basis that the group did not want a new person to enter. The group tended to react to the new person with increased hostility.

Fifth Session. In the fifth session this new member pointed out that the reality of the actual care for the cerebral palsy patient differed from what publications of United Cerebral Palsy stated. She was angry that the two brothers for whom she had to care had no opportunity to obtain the benefits other patients received.

There was also some discussion in the fifth session about educating the cerebral palsy child. One mother had sent her child through college. She spoke of the tremendous disappointments she and her husband suffered when the girl was not able to find a job. They considered their investment in her education as wasted. The therapist suggested that perhaps one

could go to college for other than vocational reasons. This raised an extensive discussion by the parents as to just what these children could be expected to do. This led to their own feelings that they would like to be relieved of the burden of care for the children, even though realistically they knew that most of these children never would be able to support themselves.

Very quickly this came to the question of what would happen to the children after the death of the parents. This was a constant problem which had beset these parents many times.

Sixth Session. By the sixth session it was interesting to note the parents felt that there should be some specialized education for the children, so that they could become independent. Even the mother who had refused to give her child an allowance altered her opinion to the extent that, if they earned it, then the money might be theirs to spend as they wished. The father who had spoken formerly of overcontrol again emphasized that the children needed their independence.

When he mentioned independence, one of the mothers in a shy way confessed that she always had censored what movies and plays her child was allowed to see. Another mother questioned this vigorously. With the support of her husband she gave examples of how they took their daughter to whatever theatrical productions or movies were available. The therapist then pointed out some psychological realities such as that there would be sexual thoughts anyway in these children. To hide them from things of which they knew already only acted as a stimulus to more fantasies. Knowing this the parent could check her thoughts about the effects of uncensored material on her child.

The group knew the sixth session also was the last. Several commented that they wished the meetings could continue. Most believed they had benefited from them. For some the six meetings, although four weeks apart, had been an emotional experience. One father said he had one thing to tell before the end.

He brought this up when the theme had verged again to guilt feelings over being the parent of a cerebral palsy child. He said that he had never told anyone why he felt responsible for his child's birth damage. On the night his wife was in labor he had gone to a business party and had become intoxicated. This, he said, had prevented his calling in a more competent doctor who could have saved his child. Certainly for this father it was a tremendous emotional experience to confess this after so many years. The group turned again to the topic of younger parents and thought they should undergo this type of group experience.

Discussion

There were few substantial findings or results from this particular study. It was not sufficiently controlled or intensive under the circumstances to state definitely that the hypotheses had been substantiated. But it can be seen that steps were taken by the group to modify their usual behavior patterns. These alterations then would be of aid to the cerebral palsied patients. Some provocative questions were raised which might be answered by future work. Some of these were: How did the body image of the cerebral palsy patient reflect that of the parent? How did it develop? How did the patient have acceptance of his disability? To what extent did this result from parental acceptance also? How did magical expectations of parents play a role in the patient's conception of his future in society? Related to this was the question of whether education should be purely vocational, mixed, or academic.

It would seem that the chief therapeutic device utilized by the group was catharsis. They ventilated freely and vociferously on many topics without receiving censure or retaliation. They had a favorable experience to authority.

The same pattern of hostility to authority seemed to rebound to the children, as seen in the questions of allowances and allowing them to fall

down. The overprotection which the parents manifested had its subtle, covert element of anger which the children picked up. In the straits of the dilemma to resist or yield, the patients assessed their realistic dependency to the best of their ability and then propitiated the parents. The parents had sacrificed and must be repaid.

Another element which influenced the course of therapy was the countertransference of the therapist. As mentioned above, there were persistent elements attempting to produce negative feelings in him. He began through the sessions to understand more of the deeper undercurrents moving these parents. He sensed their loss of pleasure and pride as their children lived on in the world of the handicapped. The magical expectations which form a part of parenthood often were assaulted brutally by the world of medicine and the public. This acceptance and positive feeling perhaps communicated itself to the parents and aided their use of the group method.

The readiness of this group to discuss fairly deep material in these six monthly sessions may indicate that their similar experiences provided an emotional commonality which made the parent group particularly receptive to group psychotherapy.

The parents felt enthusiastic about the meetings. Apparently the group experience had increased their cohesiveness and perhaps their insight into their relations with their children.

The psychiatric role in rehabilitation of the cerebral palsy child might well be helped by group psychotherapy of the parents. Questions raised by this study may help guide a more intensive research program to establish the role of group therapy as a supplement to rehabilitation.

Reference

1. Grayson, M.: *Psychiatric Aspects of Rehabilitation*, Rehabilitation Monograph II, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, 1952.

Employability Following Poliomyelitis

Miland E. Knapp, M.D.

and

Lewis Sher, M.D.

Minneapolis

● This paper is a statistical study of the effect of poliomyelitis upon the employability and economic status of 4,409 patients discharged from the Elizabeth Kenny Institute from 1942 through 1955. This information is correlated with the type and severity of involvement and the age at which the patient contracted poliomyelitis.

The current popularity of rehabilitation — physical, mental, social, and vocational — at all governmental levels has resulted in multimillion dollar appropriations for the construction and operation of rehabilitation centers throughout the nation. Statistics have been offered as to the number of disabled persons who might be eligible for such institutions and the number of individuals who are becoming disabled yearly. These figures are staggeringly high (2 million backlog), but are based mainly on estimates rather than facts. Little attention is paid to whether these admittedly handicapped persons need rehabilitation or would, in fact, be benefited by rehabilitation procedures.

While many articles have been published in medical journals about what is going to be accomplished with rehabilitation in the future, very few have been published stating what has already been accomplished. Especially is this true in the field of vocational rehabilitation. Every state in the Union has a division of vocational rehabilitation which has been functioning for a number of years. Most of them are working to capacity and have mounting backloads of cases. Reports are published showing the operations of these agencies and the cases handled, but their relationship to the problem of handicapping disease is not defined.

For these reasons a study of a single handicapping disease to show the relationship of the total problem to employability might be illuminating. Since 1940 we have been interested primarily in poliomyelitis at the Elizabeth Kenny Institute. Rather complete records have been kept and a long follow-up procedure has been carried out. Therefore, a

survey of the employment statistics of these patients, all of whom were victims of poliomyelitis, should shed light on the problem because these are accomplished facts and not suppositions.

This study was started by surveying patients who were discharged from all followup in the out-patient department of the Elizabeth Kenny Institute before July 1, 1956. This includes all patients treated in the Institute either as in-patients or out-patients, whether acute, convalescent or chronic, as well as those who were examined but were decided to be unsuitable for treatment. Some were treated at the Minneapolis General Hospital but were followed in the out-patient department of the Institute. This does not include those patients who are at present being followed; therefore, those patients who have received vocational counseling from our own counselor, who has been with us only 1½ years, are not included.

We expect to continue the study so that by next year statistics should be available on all patients.

Method

A questionnaire was prepared and sent to each patient. In it we tried to obtain information concerning both the vocation and the economic level of the patient before and after poliomyelitis. The questions were as follows:

1. Occupation before poliomyelitis:
2. Occupation since poliomyelitis:

Read at the Thirty-fifth Annual Session of the American Congress of Physical Medicine and Rehabilitation, Los Angeles, September 12, 1957.

Clinical Professor of Physical Medicine and Rehabilitation, University of Minnesota; Chief, Physical Medicine and Rehabilitation, Elizabeth Kenny Institute.

Clinical Assistant of Pediatrics, University of Minnesota; Director of Out-Patient Department, Elizabeth Kenny Institute.

3. Was your occupation changed because of poliomyelitis?

Yes_____ No_____

4. Did you have help from the division of vocational rehabilitation in planning your occupation?

Yes_____ No_____

5. Was it necessary to hire household help because of your poliomyelitis?

Yes_____ No_____

If so, for how long?_____

6. Do you still hire household help because of your poliomyelitis?

Yes_____ No_____

7. Remarks:_____

On the second page were the following questions:

1. Economic level

Before After
Polio Polio

1. Dependent child _____

2. Public assistance _____

3. 0 to \$1,000 per year _____

\$1,000 to \$3,000 _____

\$3,000 to \$5,000 _____

\$5,000 to \$10,000 _____

\$10,000 and over _____

The severity of the residual involvement was determined by classifying the patients into the following categories:

A. Spinal

1. Grade I. These patients showed no evidence of paralysis at any time during the course of the disease.

2. Grade II. Paralysis was present during the course of the disease but recovery occurred to the point where any residual effect was of minor importance and did not constitute a disability.

3. Grade III. Residual paralysis of moderate degree was present but did not require braces in the lower extremities and did not involve zero muscles in the upper extremities. Some of these patients required canes, shoe corrections, and steel tongues.

4. Grade IV. Residual paralysis of severe degree was present requiring long leg braces, wheelchairs, or under-arm crutches, or extensive denervation was present.

B. Bulbar. These patients showed bulbar residuals only. Those patients

with bulbospinal involvement were classified with the spinal residual group.

Results

Of 4,409 questionnaires mailed 1,698 were answered. Persons under 18 years of age (1,049 in number) were excluded from the study since they were not considered employable.

The distribution by age and sex is shown in table 1. It might be noted that

Table 1: Patient Distribution by Age and Sex

	Male	Female	Age 18+	Total
Under 18 yrs.	595	454	...	1,049
18-20	100	57	157	...
21-30	103	181	284	...
31-40	74	96	170	...
41 and over	23	15	38	...
	895	803		
Total in study			649	
Total questionnaires answered				1,698

males were preponderant below age 21 and after age 40. The incidence in females was higher from age 21 through 40. This might be related to child-bearing.

Occupation. Answers to the question regarding change of occupation because of poliomyelitis showed no relationship to age but did show a definite increase with increasing severity of the disease. We were rather surprised that any of the Grade I and Grade II patients claimed to have change of occupation because of poliomyelitis. In going over the charts it was apparent that some of them changed occupation for other reasons. Of the 14 men, 8 must have changed occupation for other than physical reasons. Many of them stated that they were now in perfect health. Five stated that they chose less strenuous occupations because they tired rapidly or could not do a full day's work. One, who was a carpenter before his poliomyelitis, found that he could not climb well so he studied and became a supervisor at an increased salary.

Of the women, since most of them became housewives, the role of poliomyelitis in that transformation is certainly dubious. One girl stated, "Polio

Table 2: Change of Occupation Because of Poliomyelitic Involvement

	Grade				Bulbar Group	Total
	I	II	III	IV		
Male						
Cases	181	49	67	36	17	300
Changes	10	4	15	21	0	50
Percentages	7.6	8.1	22.3	58.3	0	16.6
Female						
Cases	150	83	58	35	23	349
Changes	6	2	4	10	2	24
Percentages	4	2.4	6.9	28.5	8.7	6.8

Table 3: Occupations Before and After Severe Paralytic Poliomyelitis: Males

	III		IV	
	Before	After	Before	After
Student	21	5	10	3
Farmer	20	18	13	7
Profession	4	9	1	3
Office work	2	6	2	6
Unskilled labor	2	4	1	0
Skilled labor	9	10	3	6
Sales	1	4	2	2
Engineer	2	3	..	..
Self-employed	1	3	1	1
Armed service	3	0	2	0
No occupation	1	1	0	7

Table 4: Occupations Before and After Severe Paralytic Poliomyelitis: Female

	III		IV	
	Before	After	Before	After
Student	10	0	4	0
Housewife	38	45	23	24
Profession	2	6	2	3
Office work	4	2	2	2
Unskilled labor	2	3	2	1
Skilled labor	2	2	..	..
Self-employed .....	..	..	..	1
None .....	..	..	..	2

made me realize how important an education was; I had no difficulty completing college, finding a good job and since, I've married and have a daughter two years old." She received help from the division of vocational rehabilitation, but the end-result was the same — a housewife.

The males changed occupation more frequently than the females. This would be expected because the housewives usually remained housewives regardless of disability. This is shown in table 2.

The choice of occupation following poliomyelitis is of some importance since we must frequently give this type of advice to our patients. In studying this phase we will confine our remarks to the more severely disabled cases since the mild cases present few problems. Tables 3 and 4 show the occupations of the patients with major residuals before and after poliomyelitis.

Among those patients who found no necessity for changing occupation were 18 farmers graded III and 7 farmers graded IV. Among those who did change occupations were 4 farmers graded III and 6 farmers graded IV. The professions and office work showed definite increases after poliomyelitis. Part of this is the result of graduation of students.

Table 5: Persons Receiving Aid from Division of Vocational Rehabilitation

	Grade				Bulbar Group	Total
	I	II	III	IV		
Total males	181	49	67	36	17	300
Received aid	1	0	12	14	0	27
Percentage	0.7	0	17.9	38.8	0	9.0
Total females	150	83	58	35	23	349
Received aid	2	3	5	8	1	19
Percentage	1.3	3.6	8.6	22.5	4.3	5.4

Vocational Rehabilitation. The role of the state division of vocational rehabilitation in planning for these patients is indicated in table 5, which tabulates the persons receiving such aid according to severity of involvement. This follows the same pattern — increasing with severity as would be expected. However, it seems to be somewhat weighted toward the younger age groups, since only 4 males and 4 females over age 30, and none over age 45, received aid from the division of vocational rehabilitation. Percentage-wise, this is 11.3 per cent of the male patients under age 30 and 4.1 per cent over age 30. With the females it is 6.2 per cent under 30 and 3.6 per cent over age 30 (see table 6).

The division of vocational rehabilitation gave aid to 1 male grade I and 23 males grades III and IV; and to 5 females grades I and II and 15 female patients grades III and IV; or 44 in all. The occupations before and after poliomyelitis are shown in tables 7 and 8 for the males. With the females with grades III and IV involvement, the aid was given mainly for education; in three cases the individuals later married and became housewives. In four instances they became or remained teachers (two were housewives also), one changed from a nurse to a medical record librarian, one student became a speech therapist, one was unable to carry on an occupation, one is a housewife who does general office work, one is studying bookkeeping, two were taught homecrafting, and one divorced housewife decided to remarry.

Of the nine grades III and IV and women from the bulbar group who claimed their occupations changed because of poliomyelitis without the help of the division of vocational rehabilitation, two remained housewives, one was a student who became a housewife, one a waitress and housewife who now does part-time housework, one a power machine operator who became a housewife, and one a student who became a musician. One housewife is unable to do anything. One of the remaining two changed from a factory worker to an office worker, the other from a student nurse to a medical technologist.

Household Help. The question regarding household help was asked because many of the female patients are housewives. This seemed to be the only way to determine the effect of the disease on their occupational status as one can readily realize from the above discussion. This was apparently the case, since only 38 (12.6 per cent) of the males reported the need of household help, and frequently it was stated that

Table 6: Aid from Division of Vocational Rehabilitation by Ages
18-30 31 and Over

Male			
Total	203	97	
Aided	23	4	
Percentage	11.3	4.1	
Female			
Total	288	111	
Aided	15	4	
Percentage	6.2	3.6	

Table 7: Aid from Division of Vocational Rehabilitation: Male

	III		IV	
	Before	After	Before	After
Student	9	1	6	2
Farmer	1	0	4	..
Profession .....	..	4	..	2
Office	1	2	..	4
Unskilled labor	1	..	2	..
Skilled labor .....	..	1	1	2
Sales .....	..	2	..	1
Engineer .....	..	2	..	..
Unemployed .....	..	..	..	2

Table 8: No Aid from Division of Vocational Rehabilitation: Male

	III		IV	
	Before	After	Before	After
Student .....	..	..	2	1
Farmer	3	..	4	..
Profession .....	..	2	..	..
Office .....	..	3	..	2
Unskilled labor	2	2	..	..
Skilled labor	2	1	3	4
Sales .....	..	..	1	..
Engineer .....	..	..	..	..
Self-employed .....	..	1	..	..
Armed service	2	..	2	..
Unemployed .....	..	..	1	6

this was farm help, while 139 (40 per cent) of the women reported the need for household help at some time. However, only 12 (4 per cent) of the men and 33 (9.4 per cent) of the women reported the continuing need of household help. In many cases this was intermittent help such as many normal housewives employ.

Unemployed. Eight men reported that they were unemployed following the poliomyelitis. However, one of these was unemployed because of tuberculosis before he contracted poliomyelitis. Thus 7 of 300 men 18 years of age or over (2.3 per cent) were unemployable because of poliomyelitis.

Two women reported that they are unemployable. This is 2 out of 349, or 0.5 per cent. This is undoubtedly not a true picture because of the probability that others who were just as disabled reported themselves as housewives.

Economic Level. The attempt to determine the economic level was not very successful. With the women it failed completely. With the men, most of these questions were not answered or not understood. However, some did answer the questions. Of these, 79 stated their income was up, 15 down, and 86 the same.

It is interesting that of the 39 males who were sufficiently disabled to change occupation or seek aid from the division

of vocational rehabilitation, 22 reported their present income higher than before poliomyelitis (5 of them are now in the \$5,000 to \$10,000 bracket). Two reported income down, one the same, and only 14 did not answer the question. This may not be too significant because of the rising general economy during these years and because some of these were students whose income could not go lower. However, it seems to indicate that poliomyelitis does not permanently lower the income of the majority of patients.

Summary

Of 4,409 questionnaires on vocation and income sent to postpoliomyelitis patients, 1,698 were answered. There were 649 postpoliomyelitic patients, age 18 and over, studied. The occupational groupings, both before and after poliomyelitis, are tabulated. The state division of vocational rehabilitation gave aid to 44 patients. Household help was needed temporarily by 12.6 per cent of the men and 40 per cent of the women, and permanently by 4 per cent of the men and 9.4 per cent of the women. Of the men, 2.3 per cent, and of the women, 0.5 per cent were unemployable. The income level of the total group is reported as generally better than before poliomyelitis.

WANTED . . . WANTED . . . WANTED

All of you at the meeting this month! You cannot afford to miss the excellent program planned by the Program Committee this year. The scientific and technical exhibit sections will more than warrant your attendance at the meeting. Reserve your accommodations now — write, wire or telephone The Bellevue Stratford, Philadelphia stating that you will attend the Congress meeting. The Local Host and Hostess Committees have lined up activities to make this a memorable meeting. DO COME.

Frank H. Krusen Receives Distinguished Service Award of American Medical Association



Dr. Frank H. Krusen, head of the Section of Physical Medicine and Rehabilitation of the Mayo Clinic and professor of physical medicine and rehabilitation in the Mayo Foundation, Graduate School, University of Minnesota, received the 1958 Distinguished Service Award of the American Medical Association in San Francisco, where the association is holding its 107th annual meeting. Dr. Krusen is the first active member of the staff in the history of the Mayo Clinic to receive this award.

The Distinguished Service Award of the American Medical Association is regarded as one of the highest honors in American medicine, and it must be voted upon and conferred by the House of Delegates of the American Medical Association. The citation accompanying the award specifies that the honor is accorded the recipient because of "outstanding scientific achievements" during his professional career.

Dr. Krusen is recognized as one of the nation's foremost figures in physical medicine and rehabilitation, and has been honored on many previous occasions for his outstanding work in these two intimately related fields of medical practice. In 1935, he organized the Section of Physical Medicine and Rehabilitation at the Mayo Clinic. In 1936, he was elected president of the American Academy of Physical Medicine and Rehabilitation, and from 1944 to 1951, he was chairman of the Scientific Advisory Committee of the Baruch Committee on Physical Medicine, and in 1944, he was awarded the Gold Key of the American Congress of Physical Medicine and Rehabilitation. He served as president of the Congress in 1938.

In 1947, Dr. Krusen was certified as a specialist in physical medicine and rehabilitation by the American Board of Physical Medicine and Rehabilitation, Inc., and he served as chairman of that board from 1947 to 1949. In 1954, President Dwight D. Eisenhower presented him with the Physician's Award for 1953, for outstanding contributions to the employment welfare of the physically handicapped. In the same year he was named a Distinguished Ambassador of the State of Pennsylvania, and in 1956 he was the recipient of the Modern Medicine Award for Distinguished Achievement.

Last November Dr. Krusen was elected vice-president of the staff of the Mayo Clinic, and in April of this year Secretary of Health, Education and Welfare, Marion B. Folsom appointed him to the National Advisory Council on Vocational Rehabilitation, remarking, "Your experience and judgment would be extremely valuable to the work of the Council."

Currently Dr. Krusen is president of the Minnesota State Board of Health and chairman of the Governor's Advisory Committee on Vocational Rehabilitation. He is president-elect of the International Congress of Physical Medicine which will meet in 1960, and is chairman of the Council on Medical Physics and of the Committee on Rehabilitation, both of the American Medical Association. He is also president of the Mayo Foundation chapter of the Society of the Sigma Xi.

...ANNUAL REPORTS...

*American Congress of Physical Medicine
and Rehabilitation*

*American Academy of Physical Medicine
and Rehabilitation*

American Registry of Physical Therapists

Report of the Finance Committee

The following is the official audited financial report of the American Congress of Physical Medicine and Rehabilitation for the year ending December 31, 1957.

Sedgwick Mead
Herbert W. Park
Louis B. Newman
Frank H. Krusen, *Ex-officio*

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION

Report on Examination For the Year Ended December 31, 1957

May 1, 1958

Board of Governors,
American Congress of Physical Medicine
and Rehabilitation,
30 North Michigan Avenue,
Chicago, Illinois

Dear Sirs:

I have examined the balance sheet of the American Congress of Physical Medicine and Rehabilitation as of December 31, 1957, and the related summary of net income and surplus for the year then ended. My examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances, except as stated in the following paragraph.

I did not verify the income from subscriptions to ARCHIVES, a scientific journal published monthly by the Congress, because it was not considered practicable. However, I tested the correctness of the subscription income recorded on the books by reference to available supporting data.

Based on my examination, limited to exclude verification of ARCHIVES subscription income, in my opinion, the accompanying balance sheet and summary of net income and surplus present fairly the financial position of the American Congress of Physical Medicine and Rehabilitation at December 31, 1957,

and the results of its operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

I submit the following exhibits:

Exhibit

- A — Balance Sheet, December 31, 1957.
B — Summary of Net Income and Surplus for the Year Ended December 31, 1957.

Yours truly,
Joseph Kanowski
Certified Public Accountant

Exhibit A

American Congress of Physical Medicine
and Rehabilitation
(Incorporated in Illinois — Not for Profit)

Balance Sheet, December 31, 1957

Assets

Current Assets:

Cash:

Michigan Avenue National Bank of Chicago	\$14,788.47	
Bell Savings and Loan Association	10,500.00	
Petty Cash	150.00	\$25,438.47

Accounts receivable:

Advertisers and exhibitors	\$ 1,859.15	
Membership dues	140.00	
American Registry of Physical Therapists ..	912.48	
American Academy of Physical Medicine and Rehabilitation ...	613.87	3,525.50

Investments in United States Savings bonds—at cost..	58,000.00	
Accrued interest	511.78	
Deposit at United States Post Office	50.00	
Total		<u>\$87,525.75</u>

Liabilities	
Current Liabilities:	
Accounts payable	\$ 4,014.86
Accrued withholding tax, payroll taxes and salaries	1,214.65
John S. Coulter Memorial Fund	1,250.00
Subscriptions to ARCHIVES —unexpired portion	8,149.90
Dues collected in advance —year 1958	380.00
Total current liabilities	\$15,009.41
Surplus, per Exhibit B	72,516.34
Total	<u>\$87,525.75</u>

Exhibit B

American Congress of Physical Medicine
and RehabilitationSummary of Net Income and Surplus
For the Year Ended December 31, 1957

Income:	
Membership dues	\$12,229.00
ARCHIVES:	
Advertising — less discounts — net	\$14,152.99
Subscriptions	18,142.64
Sale of cuts, etc.	3,854.45
Interest on United States Savings Bonds	1,821.60
Convention income:	
Exhibits	\$ 9,250.00
Direct convention expenses	6,361.30
Convention income — net	2,888.70
Miscellaneous	856.78
Total income	<u>\$53,946.16</u>

Expenses:

Office salaries and expenses:	\$39,678.36
Printing — ARCHIVES ..	20,415.88
Cuts, half-tones, electros, etc.	3,642.80
Pay roll taxes	1,169.23
Professional fees	2,113.97
Remodeling	1,424.75
Special meeting	731.31
Sundry	2,433.66
Travel	1,298.60
Total expenses	<u>\$72,908.56</u>

Less share of expenses
billed to:

American Academy of Physical Medicine and Rehabilitation ...	\$ 250.00
American Registry of Physical Therapists ..	12,000.00
Total	<u>\$12,250.00</u>

Expenses — net	60,658.56
Net loss for the year	\$ 6,712.40
Surplus at beginning of the year	\$79,228.74
Surplus at end of the year ...	<u>\$72,516.34</u>

The report of the auditor which follows indicates that for the year ending December 31, 1957, the American Academy of Physical Medicine and Rehabilitation continued to operate on a sound financial basis.

AMERICAN ACADEMY OF PHYSICAL
MEDICINE AND REHABILITATIONReport on Examination
For the Year Ended December 31, 1957

May 1, 1958

Board of Governors,
American Academy of Physical Medicine
and Rehabilitation,
30 North Michigan Avenue,
Chicago, Illinois

Dear Sirs:

I have examined the balance sheet of the American Academy of Physical Medicine and Rehabilitation as of December 31, 1957, and the related statement of net income and surplus for the year then ended. My examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

In my opinion, the accompanying balance sheet and statement of net income and surplus present fairly the financial position of the American Academy of Physical Medicine and Rehabilitation at December 31, 1957, and the results of its operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

I submit the following exhibits:

Exhibit

- A — Balance Sheet, December 31, 1957.
B — Statement of Net Income and Surplus for
the Year Ended December 31, 1957.

Yours truly,

Joseph Kanovski
Certified Public Accountant

Exhibit A

American Academy of Physical Medicine
and Rehabilitation
(Incorporated in Illinois — Not for Profit)

Balance Sheet, December 31, 1957

Assets

Current Assets:

Cash:	
Michigan Avenue National Bank of Chicago	\$ 3,259.38
Bell Savings and Loan Association	2,000.00
Investment in United States Savings bonds — at cost	1,500.00
Accounts receivable — Members	60.00
American Registry of Physical Therapists ..	30.15
Accrued interest receivable	12.65
Total	\$ 6,862.18

Liabilities

Current Liabilities:

Accounts payable:	
Trade	\$ 259.97
American Congress of Physical Medicine and Rehabilitation ...	613.87
Dues collected in advance	130.00
Total current liabilities	\$ 1,003.84
Surplus, per Exhibit B	5,858.34
Total	\$ 6,862.18

Exhibit B

American Academy of Physical Medicine
and Rehabilitation

Statement of Net Income and Surplus
For the Year Ended December 31, 1957

Income:	
Members' dues	\$ 2,090.00
Initiation fees	860.00
Miscellaneous	126.81
Total Income	\$ 3,076.81
Expenses:	
Share of office expenses billed by American Con- gress of Physical Medi- cine and Rehabilitation..	\$ 250.00
Professional fees	587.00
Office supplies	513.67

Awards and	
Honoraria	475.00
Miscellaneous	334.79
total expense	2,160.46
Net income for the year	\$ 916.35
Surplus at the beginning of the year	\$ 4,941.99
Surplus at end of the year ...	\$ 5,858.34

**AMERICAN REGISTRY
OF PHYSICAL THERAPISTS**

January 1 — December 31, 1957

The major activities of the Registry follow the purposes for which it was organized; namely, to advance the art and science of medicine by promotion of the understanding and utilization of physical therapy, in the prevention and treatment of human ailments, and in the maintenance of or restoration to health; to aid in developing and maintaining educational and ethical standards in physical therapy for the benefit of the public generally and for the guidance of registrants of the American Registry of Physical Therapists; to develop and conduct examinations for physical therapists to determine their competency and qualifications to administer adequately physical therapy under the prescription, direction, and supervision of licensed physicians, and to maintain a registry and make available a list of such registrants. A widespread utilization of the list of registrants is advocated to the end that the facilities and methods employed in physical therapy may effectively augment the services of American medicine. All of its activities represent an effort on the part of the Registry to carry out its original purposes.

Dr. James W. Rae, Jr., was appointed to serve on the Board for a period of seven years beginning January 1, 1958.

At the Interim Meeting, April 5 and 6, 1957, Drake Hotel, Chicago, the following motions were passed:

Acceptance of American Physical Therapy Association appointment of Miss Mary Lawrence to serve unexpired term of Miss Margaret Moore on Board. Dr. Gerken to continue routine on "item pool" for present time. Appointment of a committee by Dr. Elkins to include Dr. Gerken, acting in the name of and on behalf of the Registry, to contact necessary groups, such as Council of American Physical Therapy Directors and medical directors' group interested in Dr. Gerken's problem concerning the composition of a new edition of the Registry examination. Committee to set up means of studying question and bring about joint action on necessary solution.

Dr. Elkins authorized to convey to AMA Advisory Committee on Physical Therapy Education that Registry Board feels a physiatrist should be third member of regional survey team and that the Board is willing to appoint physiatrists in each region from which group one could be selected to be third member.

Approval of Registry underwriting expenses incurred, if any, by physiatrist participating in survey.

Appointment of Executive Committee of Registry Board consisting of Chairman, Vice-Chairman, Registrar and one member-at-large to be elected by Board annually. One of functions of this Executive Committee is implementation of the Advisory Board.

Appointment of Miss Elizabeth Wood, APTA representative, to serve as member-at-large on Executive Committee.

Registry certificate to be redesigned by engaging artist to prepare samples for final selection by Executive Committee.

Acceptance of letter of inquiry to physicians covering investigation of physical therapy activities of registered physical therapists, as required in verbatim minutes on decision of Executive Committee.

Executive Committee empowered to discuss problem of revising name of Registry in By-Laws and Booklet of Information to conform with its appearance on the Registry certificates with the Board of Governors of the Congress. After a joint decision with that group, Executive Committee to report back to Registry Board.

Incorporate latest edition of By-Laws in new Registry Booklet of Information under heading "Objects of the Registry."

Revision to be made in Booklet of Information concerning retake examinations as follows: In the event of failure to pass the examination, the individual is eligible to take a repeat examination without additional cost within six months from the date of original examination or such other time interval as would be approved by the Registrar after the date of the first examination; thereafter the fee for each additional retake examination to be \$10.00.

Next supply of Registry Booklet of Information to be in mimeographed or other form to include changes made by Board at Interim Meeting.

Publication of results of salary survey made by central office of Registry in the ARCHIVES with appropriate forms to reveal how survey was carried out; an explanatory paragraph covering source of material for survey, when it was begun, period covering actual tabulation time and fact that salaries listed are average starting salaries and categories studied. All to be approved by Executive Committee before publication.

Activities of Executive Committee to be conducted in presence of quorum, which shall constitute three out of four named members.

Approval of whatever monies are needed to implement Executive Committee of Registry Board for present time; definite amount to be decided on at next meeting of Board.

Annual meeting of Registry Board to be held in Minneapolis on November 2-3, 1958.

At the Annual Meeting, November 2 and 3, 1957, Mayo Clinic, Rochester, Minnesota, the following motions were passed:

Advisory Board to meet together with Executive Committee one day prior to the meeting of the Registry Board.

Revise paragraph on foreign-trained therapists as follows: These individuals are recommended by their professional association and their transcripts are sent to the APTA office, however formal application for APTA membership is made. The office verifies all information where possible. In analyzing an individual's eligibility, basically the APTA is guided by AMA standards but in the last analysis, the APTA guide is used.

Greater distribution of the Registry Directory to take effect with its publication in November, 1958 issue of the ARCHIVES. Directory to be sent without charge to all members in good standing of the Registry; members of the Congress; Academy; diplomates of the American Board; hospital administrators; all directors of departments of physical medicine (who do not fall in Congress, Academy, Board categories); and professional associations.

For time being, discontinue sending out items for Registry examination; attempt to be made to have Dr. Gerken invited to speak to the Council of Physical Therapy School Directors and obtain their recommendations for a new means of developing and standardizing new items for the examination.

Another summary report on relative achievements of various schools on Registry examination be prepared to include a break-down by subjects as well as over-all summary. Funds to be appropriated for this project; amount to be left open.

Executive Committee be delegated to explore further problems of supervision of physical therapists and take whatever appropriate action necessary. With reference to maintenance of private practice or self-employment problem, a possible mechanism would be to require a physician to assume responsibility for the therapist; he would have to submit written plan to county medical society which would have to approve arrangement; plan would then be submitted to Registry; county medical society, having been provided with rules and regulations of Registry would then assume certain responsibilities.

The appropriate APTA officials be contacted with the suggestion that an attempt be made to compare scores made on their examination with those made by candidates writing the Registry examination.

Revision of letter sent to applicants failing Registry examination.

Revision of letter sent to registrants covering private practice or self-employment.

The Registry Board is to request legal counsel to prepare a suitable introduction to the Guide Law for Physical Therapy and that it be included in the publication of the Guide Law in a future issue of the ARCHIVES.

Arrange meeting between APTA representatives and legal counsel and Executive Committee and legal counsel of Registry Board to discuss legislation of physical therapists.

Date of registration of each registrant be included in the next edition of the Registry Directory.

Registration of foreign-trained physical therapists to be tabled until interim meeting in 1958.

A reasonable charge to be made to anyone requesting a new certificate because of name change or loss. Registrants of ARPT to be circularized for their opinion of a combined registration fee and subscription to the ARCHIVES for a total sum of \$5.00.

A letter to be sent to three Canadian schools not presently approved by the Canadian Medical Association to effect that Registry Board is desirous of making it possible for physical therapists trained in Canadian schools to become registrants of the ARPT.

Registrar to contact several public relations agencies relative to ethical public relations efforts on part of the Registry to acquaint its members with its activities.

The Registry Executive Committee consider the recommendatory action of the Executive Committee of the AMA Advisory Committee on Physical Therapy Education relative to: appointment of physiatrists to serve in non-voting capacity on survey teams for inspection of schools of physical therapy and recommend to Council two members from the Board.

Next interim meeting of Registry Board be held in Washington, D. C., April 19-20; Executive Committee to meet on April 18, 1958.

Election of Dr. Earl C. Elkins, Chairman of the Board; Dr. Robert L. Bennett, Vice-Chairman, and Dorothea C. Augustin, Registrar-Secretary-Treasurer. Miss Mary Lawrence nominated as member of Executive Committee for 1958.

A number of special problems were considered and several interim actions were completed by the Registry Board of 1957.

No registrations were cancelled during the year, 1957.

The following members were reinstated: Mrs. Freda N. Hairston, 4850 Dayton-Liberty Rd., Dayton, Ohio; Miss Hilda A. Kirkendoll, 3300 Linwood Blvd., Kansas City, Mo., and Mrs. Charlotte Smith, 35 Harrisburg Run, Bradford, Pa.

The following members have been dropped from the roster of therapists in good standing for non-payment of dues: Mary R. Agay, Mildred H. Albert, Wayne F. Allen, Mary B. Anderson, May E. Anderson, Lillie M. Bachanz, Virgil Ball, Lillian Balshin, Patricia Binder, Sue Boehm, Mary M. Boone, James Carlson, Janet O. Carroll, Ruth W. Catton, Beatrice E. Cavan, Claire F. Cayer, Ruth L. Chatfield, Kay M. Chow, Cynthia Y. Clair, Margery J. Coale, Helen M. Colarich, Maryann Coldwell, Harry T. Covington, Clifton H. DeVoll, Yolanda Diaz-Buso, Salvatore E. DiFede, Jr., Walter Dmytryshyn, Susanne R. Easterbrook, Shirley K. Edelstein, Ann Egan, Martha B. Eigen, George R. Ellington, Jr., Marit P. Evans, Alcatha Fahringer, Nancy H. Fieber, Ruth L. Flory, William P. Fortune, Mitzi-Ann Gann, Pauline S. Gilson, Mary P. Glavin, Robert S. Gourley, Hazel T. Hall, Sara H. Halls, Walter A. Hanson, James B.

Harrigan, Anita M. Harris, Jeanne K. Harris, Sylvia Hartman, Rebecca Hastings, Marion Haws, Cecille Hebbald, Donna Hoard, Henry Ho-Asjoe, Margaret Jankovich, Elizabeth A. Jones, Samuel L. Kaplan, Mary Elizabeth Kelley, Luther Keyes, Lillian E. Keys, Barbara J. Koppen, Marjory M. Kretz, Nancy Kronfeld, Joan C. Kuhn, Linnie Lacy, Gwendolyn Lape, Frances E. Lawhorne, Loreta M. Lindahl, Romwalda Lissy, Catheryn Martin, Robert McIntyre, James McKillip, Jr., Anita M. McQuillen, Helene Miller, Anne Morrill, LeRoy Mosman, Phyllis Murphy, Michael Myers, Paul Nazario, Nan Nies, Elizabeth Obertreis, Elizabeth Parrish, Dorothy Parsons, Anne Prochazka, Grace Radabaugh, Phyllis Ramsey, Margaret H. Rapp, Genevieve Reilly, Elizabeth Rhea, Philip Riddleberger, Viola Robins, Lumida Rodriguez, Mary E. Ross, Anne Sansom, Walter Sarvey, Thomas W. Scott, Shirley Schnert, Rudolph Sellers, Dorothy B. Sharpe, Alice Slocum, Blanche C. Smith, Charles C. Smith, Hazel G. U. Smith, Lorraine L. Snodgrass, Elizabeth M. Speltz, Viola Stoick, Lois Strobridge, Gerda Styles, Laura Taber, Marilyn Tucker, Viorine Valicenti, Virginia Van Ark, Janet Vichinsky, Ann H. Vogel, Donald B. Wagner, Gladys Walker, John Wall, Joan Wesp, Shirley Woods, and Lillian Zarren.

The following members have dropped their membership: Emily Adams, Shirley L. Adams, Hazel V. Adkins, Virginia Amenda, Alice P. Anderson, Virginia M. Badger, Eileen C. Baumel, Marjorie K. Begeman, Joan M. Behringer, Lucile Y. Bent, Judith R. Bissell, Joan C. Bissonnette, Evangeline K. Bobrow, May C. Boylan, Helen F. Breitigan, Dorothy I. Briggs, Miss Isadore Brown, Betty Burton, Caroline R. Caggiano, Enid B. Callahan, Minerva W. Cheshire, Sister M. Chrysantha, Mary P. Clancey, Lucille G. Colville, Katherine M. Cowan, Sally S. Cutler, Lucille Daniels, Dorothy C. Danielson, Harry E. Dean, Jr., Victor A. De Pompeo, Georgia Dunkerley, Jean L. Eastep, Joan R. Eime, Elizabeth B. Engel, Emilie G. Fellner, Carl C. Forrest, Jr., Alice S. Frazier, Cesira Frazy, Martin S. Garfinkel, William H. Garton, Catherine Graham, Barbara D. Graves, Miss Joe H. Gray, Lloyd B. Hanlon, Miss Willie R. Harvey, Ella K. Hervey, Ellen R. Hibbert, Susanne Hirt, Jeanette Hollar, Winifred G. Hoskins, Elaine Hurst, Alice B. Jansen, Helen A. Johnson, Janice R. Judd, Marion Keating, Barbara W. Kivlin, Virginia R. Knittle, Claire M. Krueger, Lucienne T. Lanson, Kathleen V. Lyons, Charles M. Magistro, Nancy D. Mahan, Harvey Margolin, Mary F. McDowell, Frances C. Miller, Martha K. Monroe, Vera M. Morford, Mary E. Myers, Mary E. Nesbitt, Eunice S. Niess, Richard H. Oehler, Peter Parisi, Cora M. Pedersen, Rita Peters, Pauline Plummer, Mildred L. Prather, Gertrude S. Randle, Lois Ransom, Mary E. Rexroad, Sally H. Rosemond, John Rugaart, Jr., Roy H. Saunders, Tina Schober, Margie B. Scott, Ellanor Shanklin, Phyllis Sharpe, Robert Simpson, Ethel Smith, Lola E. Smith, Marian M. Smith, Marjorie M. Stamm, Ellsworth Swanson, Norman Taslitz, Rubie M. Tuft, Evelyn M. Turner, Dorothy Uno, Frank T. Visconti, Dorothy E. Voss, Catherine M. Wallace, Annette H. Warden, Mary Ellen Weber, Emily Wellington, Elisha S. West, Shirley P. Westmoreland, and Marian Williams.

The following members are deceased: Agnes P. Domholt, Barbara V. Donaldson, William H. Lorente, Euphemia G. Lyall, Cora A. O'Day, Elizabeth U. Saur, Carol F. Scott, Stella S. Shepherd, Etta Underwood, Katharina Van Ness, and Eileen Webster.

Certificates Issued According to

School of Graduation

Name of School	Number of Graduates Registered
Albany Hospital, Albany, N. Y.	2
Boston University, College of Physical Education for Women, Sargent College, Cambridge, Mass.	2
University of Buffalo, Buffalo, N. Y.	2
Charity Hospital of Louisiana, New Orleans	1
Cleveland Clinic Hospital, Frank E. Bunts Educational Institute, Cleveland	15
College of Medical Evangelists, Los Angeles ...	14
Columbia University, College of Physicians and Surgeons, New York City	14
University of Connecticut, Storrs	13
Duke University School of Medicine, Durham, N. C.	16
Hermann Hospital, Houston, Texas	10
State University of Iowa College of Medicine, Iowa City	1
University of Kansas Medical Center, Kansas City, Kans.	22
Marquette University School of Medicine, Milwaukee	16
Mayo Clinic, Rochester, Minn.	25
Medical College of Virginia, Richmond	2
University of Michigan, Ann Arbor	16
University of Minnesota, Medical School, Minneapolis	16
New York University, School of Education, New York City	3
Northwestern University Medical School, Chicago	2
Ohio State University, Columbus, Ohio	4
Division of Physical Therapy, School of Auxiliary Medical Services, University of Pennsylvania, Philadelphia	11
School of Physical and Occupational Therapy of the State Insurance Fund, Santurce, Puerto Rico	1
St. Louis University, St. Louis	18
Simmons College, Boston	7
University of Southern California, Los Angeles ..	9
Stanford University, Stanford, Calif.	7
University of Texas School of Medicine, Galveston, Texas	5
Grady Vaughn, School of Physical Therapy, Baylor University Hospital, Dallas, Texas	13
Washington University School of Medicine, St. Louis	8
TOTAL	275
Number of registrations completed	275
Number of examinations conducted	649
Number of retake examinations conducted	42

The report of the auditor which follows indicates that for the year ending December 31, 1957, the American Registry of Physical Therapists continued to operate on a sound financial basis.

AMERICAN REGISTRY OF PHYSICAL THERAPISTS

Report of Examination For the Year Ended December 31, 1957

May 1, 1958

Board of Registry,
American Registry of Physical Therapists,
30 North Michigan Avenue,
Chicago, Illinois

Dear Sirs:

I have examined the balance sheet of the American Registry of Physical Therapists as of December 31, 1957, and the related statements of net income and surplus for the year then ended. My examination was made in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

In my opinion, the accompanying balance sheet and statement of net income and surplus present fairly the financial position of the American Registry of Physical Therapists at December 31, 1957, and the results of its operations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

I submit the following exhibits:

Exhibit

A — Balance Sheet, December 31, 1957.

B — Statement of Net Income and Surplus for the Year Ended December 31, 1957.

Yours truly,

Joseph Kanovski
Certified Public Accountant

Exhibit A

American Registry of Physical Therapists
(Incorporated in Illinois — Not for Profit)

Balance Sheet, December 31, 1957

Assets

Current Assets:

Cash:

Michigan Avenue National Bank of Chicago	\$15,624.14	
Bell Savings and Loan Association	7,500.00	\$23,124.14
Accounts receivable — dues and registration	\$ 810.00	
Less reserve for possible losses	650.00	160.00
United States Savings bonds — at cost		50,000.00
Accrued interest		415.39
Total		\$73,699.53

Liabilities

Current Liabilities:

Accounts payable:	
Trade	\$ 748.69
American Academy of Physical Medicine and Rehabilitation	30.15
American Congress of Physical Medicine and Rehabilitation	912.48
Accrued federal excise tax ..	11.70
Dues collected in advance — year 1958	18,624.00
Deposits with applications (subject to refund if ap- plications are rejected) ..	945.00
Total current liabilities	\$21,272.02
Surplus, per Exhibit B	52,427.51
Total	<u>\$73,699.53</u>

Exhibit B

American Registry of Physical Therapists

Statement of Net Income and Surplus
for the Year Ended December 31, 1957

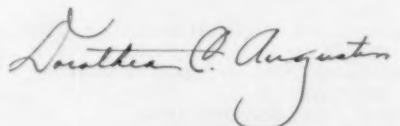
Income:

Dues	\$20,179.00
Registration fees	10,747.00
Sales:	
Pins	\$ 369.00
Emblems	312.25
Directory	130.50
Interest	1,540.78
Miscellaneous	1.81
Total income	<u>\$33,280.34</u>

Expenses:

Share of office expense billed by American Con- gress of Physical Medi- cine and Rehabilitation ..	\$12,000.00
Examinations — supervision and grading	986.00
Meetings and conferences	3,435.28
Purchase of pins	1,880.00
Office supplies	2,645.94
Office equipment	762.92
Legislation reporting service	2,160.00
Professional fees	2,146.76
Purchase of emblems	294.00
Directory, 13th edition ...	4,371.11
Miscellaneous	203.13
Total expenses	30,885.14
Net income for the year	\$ 2,395.20
Surplus at beginning of the year	\$50,032.31
Surplus at end of the year ...	<u>\$52,427.51</u>

Respectfully submitted,


AMERICAN REGISTRY OF
PHYSICAL THERAPISTS
Dorothea C. Augustin, Registrar*we meet . . .**in philadelphia . . .**in 1958 . . .*

**36th Annual Session, American Congress of Physical
Medicine and Rehabilitation, Philadelphia, Hotel
Bellevue Stratford, August 24-29, 1958.**

abstracts

Untoward Effects Following Local Hydrocortisone Injection. P. Hume Kendall. *Ann. Phys. Med.* 5:170 (Feb.) 1958.

Kendall reviews the side effects of 2,256 consecutive patients given a total of 6,700 injections of hydrocortisone with and without two per cent procaine or hyaluronidase. The overall incidence of untoward effects was 1.09 per cent in the 6,700 injections. General effects were allergic reactions such as urticaria and bronchospasm; hemorrhagic reactions such as purpura and gastrointestinal bleeding; nausea and vertigo. Local effects included urticaria around the site of injection, definite objective weakness in the muscles surrounding the site of injection and local sepsis. In twenty per cent of the cases there was an acute "flare-up" of local symptoms which usually subsided within 24 hours and followed by a highly satisfactory therapeutic result. In discussing the results Kendall felt that the hyaluronidase was not a factor but that procaine in the hydrocortisone may have been responsible for some of the allergic reactions.

Osteoporosis in the Aged: Radiographic Survey with Clinical and Chemical Correlations. L. Gitman; T. Kamholtz, and J. Levine. *J. Gerontol.* 13:43 (Jan.) 1958.

An investigation was made of the incidence and degree of osteoporosis in 565 institutionalized elderly subjects (218 males and 347 females). The incidence of radiographic osteoporosis was found to be higher in females than males in all age groups over 65 years. In females the incidence increased markedly with age while in males it appeared stationary. The degree of activity was only imperfectly related to the degree of osteoporosis. Seventy-two per cent of the patients with significant (unequivocal) osteoporosis was ambulatory. Among bedridden patients, however, significant osteoporosis was almost four times as frequent as early stage or equivocal osteoporosis. Incidence of back pain, body weight, hemoglobin, blood calcium, phosphorus, alkaline and acid phosphatase, sugar, urea, nitrogen, total protein, albumin and globulin, thyroid uptake of radio-iodine 131 (54 cases), fasting serum vitamin A levels and vitamin A tolerance tests (5 cases) were not correlated with the degree of osteoporosis. One would have expected that back pain would have been a more prominent symptom. Unfortun-

nately the authors do not mention whether the pain could be elicited by palpation of the spine. Presumably they refer only to spontaneous complaints by the subjects.

Arthrogryposis Multiplex Due to Congenital Muscular Dystrophy. Betty Q. Banker; Maurice Victor, and Raymond D. Adams. *Brain* 80:319 (Sept.) 1957.

The clinical and pathological findings in two male siblings, one 5½ months old and the other 1½ hours old, are presented. Pathological changes in both cases were identical to those seen in progressive muscular dystrophy and consisted of variation in the size of muscle fibers; centrally placed muscle fiber nuclei with increase in adipose and fibrous connective tissue; increase in the number of sarcolemmal nuclei; and presence of a large number of fetal fibers. In the older sibling immobility of joints and postural abnormalities were the striking features. The greatest amount of connective tissue was found in muscles that were shortened. This suggested that fibrosis was the basis of the contracture. In the second sibling this was a hypotonia without contracture. The authors point out that arthrogryposis multiplex congenita as well as congenital weakness and hypotonia may be characteristics of any one of a number of diseases both neuropathic and myopathic in origin. Moreover, hypotonia and arthrogryposis may occur in the same disease and are not mutually exclusive.

Hysteria, the Hysterical Personality, and "Hysterical" Conversion. Paul Chodoff, and Henry Lyons. *Am. J. Psychiat.* 114:374 (Feb.) 1958.

The authors attempt to clarify some of the confusion that arises around the use of the terms "hysteria, hysterical reaction, conversion hysteria, conversion reaction, and hysterical personality," through a review of the literature on hysteria and the hysterical personality and from the review of 17 charts of patients diagnosed as conversion hysteria at the Washington, D. C., VA Hospital. Egoism, dramatization, inconsistency of reaction, emotional shallowness, lasciviousness, and sexual frigidity are common characteristics mentioned in the literature, describing the hysterical personality. However, from the litera-

ture different authors varied in their opinion as to whether the person with the conversion reaction previously had a typical hysterical personality. Some authors felt that 100 per cent of the patients with conversion hysteria had hysterical personalities, while others thought that it was not necessary to have a hysterical personality to develop a conversion reaction. In Chodoff and Lyon's study of 17 patients with a diagnosis of conversion hysteria, only three fell into the personality pattern laid down for a diagnosis of hysterical personality. They discussed the psychodynamics of hysteria and why this condition is seen 15 times more frequently in women than in men. No definite conclusions were made, but the authors stressed the difference between the hysterical personality and a conversion reaction or hysteria, and that one is not necessarily associated with the other.

Postural Blood Pressure Changes in the Elderly. Manuel Rodstein, and Frederic D. Zeman. *J. Chron. Dis.* 6:581 (Dec.) 1957.

The authors studied the orthostatic tolerance test, as used by the Civil Aeronautic Authority, in 250 ambulatory aged patients during routine physical examinations. Several months later these people were questioned regarding symptoms of dizziness, headache, faintness, weakness, shortness of breath, the time relationship of these, and their relationship to medication, without any reference to the previous examination.

Marked falls of systolic or diastolic pressure were not seen. No subject showed a fall below 90/54 on standing. There were mild but abnormal falls of pressure frequently, and among the subjects showing these findings there was a high incidence of marked varicose veins and thrombophlebitis.

Although the symptoms reviewed were frequent, in this study they could not be correlated either with appreciable falls in blood pressure on standing or to elevated resting blood pressures.

The authors feel that this information emphasizes the need for caution in interpretation and explanation of these untoward subjective sensations in older people.

Cross Exercise — A Review of the Literature and Study Utilizing Electromyographic Techniques. Robert A. Gregg; Aniello Mastellone, and Jerome W. Gersten. *Am. J. Phys. Med.* 36:269 (Oct.) 1957.

After a brief but excellent review of the literature on cross education going back as far as 1894, the authors describe their experimental methods. Using surface electrodes, they tested the right and left triceps and biceps of 20 normal adults using a marking system which enabled them to know when the

arm was in 10°, 45°, 90°, and 125° of flexion and extension at the elbow. The subjects were then tested with no weight, 10 and 20 pounds and finally with isometric contraction against supermaximal resistance. Flexion and extension of the elbow were tested in four variations of the supine position. They described the results and reached the following conclusions:

1. Overflow to the unexercised, contralateral muscles did not occur during simple, non-resistive exercise or during isometric contraction of the biceps brachii.
2. Overflow invariable would appear first in the opposite triceps brachii.
3. Overflow to the contralateral biceps brachii appeared as the exercise stress increased.
4. Positioning of the unexercised arm and stabilizing body straps did not influence the appearance or distribution of the overflow.
5. A relationship between the appearance of overflow, movement of a heavy load, and fatigue is suggested.

Shoulder-Hand Syndrome Following Myocardial Infarction with Special Reference to Prognosis. Joseph Edeiken. *Circulation* 16:14 (July) 1957.

Edeiken gives a brief review of the literature which describes the symptoms and signs, the various stages of the disease and the prognosis, which not infrequently was the contracted "claw hand." He also mentions various treatments used.

The present study, on 42 male and female patients ranging from 32 to 73 years, evaluated the prognosis of those patients who received only physical therapy consisting of local heat, analgesics and active use of the involved extremity. The location of all the myocardial infarcts, the time of onset, the parts involved, the severity and the duration of symptoms also were studied.

Results indicated that the disorder is self limited and is less severe for patients treated by physical therapy than inferred from the literature. There was no correlation between the presence of referred shoulder pain during infarction and the later development of the syndrome nor was the severity of the shoulder-hand morbidity related to the severity of the myocardial infarction.

Since ten per cent to fifteen per cent of patients having an acute myocardial infarction may develop this syndrome and the onset may be insidious, Edeiken recommends that all patients with an acute infarction should be instructed to move their arms and shoulders while in bed. By this means stiffness may be prevented before the patient or physician recognizes it. By the use of this treatment ninety-five per cent of the author's

patients obtained complete to nearly complete relief.

Simple Methods of Estimating Oxygen Consumption and Efficiency of the Muscles of Breathing. E. G. M. Campbell; E. K. Westlake, and R. M. Cherniack. *J. Appl. Physiol.* 11:303 (Sept.) 1957.

The oxygen consumption of the respiratory muscles was estimated by increasing the ventilation with added dead space and measuring this oxygen consumption and ventilation with a closed circuit spirometer. Known amounts of extra mechanical work were imposed on the respiratory muscles by inspiring through a column of water of varying height. The efficiency of the respiratory muscles was estimated by measuring the increased oxygen consumption associated with the performance of added respiratory work. In one normal subject the authors found that a large increase in the ventilation caused little increase in the oxygen consumption. An emphysematous patient showed a greatly increased oxygen consumption when ventilation was increased. In both patients the efficiency of the respiratory muscles was relatively constant at the various levels of mechanical work. A comparison of the oxygen consumption and efficiency of the respiratory muscles during expiratory resistance, the phase of respiration that is so difficult in patients with emphysema and asthma, would also have been of interest.

Level of Medical Information Among Clinic Patients. Arthur W. Seligmann; Neva E. McGrath, and Lois Pratt. *J. Chron. Dis.* 6:497 (Nov.) 1957.

This is a report of the results of a simple medical information questionnaire administered to 214 outpatients to determine their level of information. The results are both interesting and instructive. Only 55 per cent of the questions were answered correctly. Patients with higher education levels gave more correct answers. The patients were best informed about diseases, especially tubercu-

losis, diabetes and syphilis, which have been the subject of public education and information programs. Patients having had one or more of the diseases in question did no better than the rest of the group, but those who had associates with these diseases did significantly better. Throughout all groups, the patients did very poorly on information regarding coronary thrombosis, in spite of its high incidence.

The authors point out that this level of information is inadequate for optimal patient-physician relationship. They suggest in conclusion that this should be taken into account in planning treatment, and recommend educating patients to a better level of understanding.

The Long-Acting Anticholinesterase Drugs in the Management of Myasthenia Gravis. Henry Aranow, Jr.; Paul F. A. Hoefler, and Lewis P. Rowland. *J. Chron. Dis.* 6:457 (Nov.) 1957.

The authors report their experiences with octamethylpyrophosphoramide in 21 patients. Fifteen were women between 17 and 42 years of age and six were men between 26 and 61 years of age. This anticholinesterase drug, under observation for several years, appears to be absorbed well from the gastrointestinal tract, to have predominantly peripheral actions, to lack the central side-effects which have complicated clinical use of some of the other long-acting anticholinesterases, and to have a prolonged period of action. It was necessary to use atropine to block the autonomic ("muscarinic") effects of the drug. There were 12 deaths in the series, seven of which occurred while the patients were receiving the drug, five after discontinuing its use.

It is concluded that the drug is an excellent agent for the patient with only moderately severe and stable myasthenia gravis, that it should not be used in patients with diseases of progressing severity, and that it should be used with great caution in the face of severe but stable disease.

PUBLIC HEALTH SERVICE REPORTS ON INJURIES IN U. S.

Home Accidents Account for 40%

About 25 million persons in the U. S. were hurt seriously enough in the second half of last year to require medical attention or to limit activities for at least a day. The latest report of the National Health Survey blamed home accidents for 40.3% of the total; work accidents, 16.7%; motor accidents, 9.8% and others, including injuries from violence, 33.1%. Of the total, 14.1 million were males; 14.9 million were urban residents; 7.1 million lived in rural non-farm areas and 3 million on farms. On an average, about 1,175,000 persons every day were limited because of injuries, and of these, 305,000 were in bed or in a hospital.

book reviews

The reviews here published have been prepared by competent authorities and do not necessarily represent the opinions of the American Congress of Physical Medicine and Rehabilitation and/or the American Academy of Physical Medicine and Rehabilitation.

PHYSIKALISCHE THERAPIE. By Dr. Josef Kowarschik. Cloth. Price, \$11.45. Pp. 338, with illustrations. Springer-Verlag, Molkerbastei 5, Vienna, 1957.

The most recent edition of this textbook gives the impression that this is still one of the bibles of physical medicine. The book is well written and the illustrations are clear and instructive.

The author points out that this is a complete revision of the former text. It reflects the changing status of physical medicine and rehabilitation. Modalities such as hydrotherapy have been curtailed. The chapter on low volt currents has been adapted to modern concepts and the chapter on mechanotherapy and exercises has been greatly enlarged. The inclusion of the chapters on "Reflexzonenmassage, Sympathische Massage and Gleitende Saugmassage" (gliding suction massage) illustrates the interesting trend towards the understanding of the long ignored role of autonomic and endocrine intervention. The author's views on the indication and usefulness of ultrasonic therapy are highly controversial. Unless there is an English translation of the book available access to this text will be limited. This is regrettable since the book represents the life study of one of the truly great figures of physical medicine. (H. J. Behrend, M.D.)

THERAPEUTIC EXERCISES FOR THE TREATMENT OF THE NEUROLOGICALLY DISABLED. A Text for Corrective Therapists and Corrective Physical Educators. By Harold J. Brenner, M.S. Cloth. Price, \$3.50. Pp. 73, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

This is a manual for corrective therapists by a corrective therapist outlining the most common procedures utilized in VA hospitals in treatment of neurological conditions. Corrective therapists are concerned with the use of therapeutic exercises to aid in rehabilitation of many neurological disabilities. Discussion of physiology and pathology is almost nonexistent. Technical details relate to ambulation methods, exercises for range of motion, re-education, coordination and strengthening.

Disease entities discussed include hemiplegia, multiple sclerosis, Parkinsonism, poliomyelitis and polynuritis.

This text will be of little value to physical therapists in approved schools and illustrates the lack of emphasis on understanding of basic abnormal physiology and the prime importance of medical prescription and supervision as compared with similar educational material for physical therapists. (Arthur L. Watkins, M.D.)

SPONDYLITIS ANKYLOPOETICA (Morbus Strumpell-Marie-Bechterew). By Prof. Dr. Victor R. Ott, and Prof. Dr. Hans Wurm. Paper. Price, 38 DM. Pp. 246, with illustrations. Verlag Dr. Dietrich Steinkopff, Darmstadt, Germany, 1957.

This book is a remarkably comprehensive yet compact presentation of a most difficult problem. One of a series of monographs on the rheumatic diseases, it is limited to rheumatoid arthritis of the spine. Part I, by Ott, deals with the clinical aspects of inflammatory stiffening of the vertebral column. The course of the disease is described in detail with the aid of many excellent illustrations, and there are good sections on diagnosis, laboratory findings, etiology, treatment, and prognosis. Part II, by Wurm, is a well-illustrated summary of the pathological anatomy of this disease. A commendable feature is the appendix summarizing the clinical history and autopsy findings of each case represented by the gross or microscopic material of the illustrations.

The conclusion to which the authors are led after considering all the detailed knowledge now available is stated in a particularly difficult sentence on page 225 and seems to be this: In spondylitis ankylopoetica the changes that lead to stiffening of the vertebral column are best explained by assuming that the well known perivertebral and synovial inflammatory changes, which themselves are not directly concerned in the stiffening, exert some segmental "action at a distance"; the behavior of the blood vessels in the marrow-spaces, in the ossification zones, and in the pathological synchondroses have to be assigned a decisive role in the abnormal growth process, and therefore this action at a distance must be in

the nature of a neurally-transmitted circulatory disturbance in the vertebral segments.

The bibliography (pp. 230-240) is valuable as a key to recent publications in both Europe and North America. It is followed by both author and subject indexes. The book is recommended to the attention of psychiatrists and rheumatologists. (*Frederic T. Jung, M.D.*)

A FRONTAL SECTION ANATOMY OF THE HEAD AND NECK. By *Otto F. Kampmeier, Ph.D., M.D.; Arthur R. Cooper, Ph.D., M.D., and Thomas S. Jones, B.F.A.* Cloth. Price, \$15.00. Pp. 12 printed matter, with illustrations. University of Illinois Press, Urbana, Ill., 1957.

The authors present 20 actual size frontal section photographic illustrations of the head and neck. Each illustration is taken from successive, almost symmetrical, slices of tissue. The parts are carefully labeled and color is used to delineate structural differences. An extensive bibliography is also included with the introduction. This atlas should be of great assistance to specialists as well as anatomists. (*Herbert Kent, M.D.*)

DEAFNESS, MUTISM AND MENTAL DEFICIENCY IN CHILDREN. By *Louis Minski, M.D.* Cloth. Price, \$3.75. Pp. 82, with illustrations. Philosophical Library, Inc., 15 E. 40th St., New York 16, 1957.

In this small volume, various standard testing procedures are briefly described. These include hearing testing by noise-makers, pure-tone audiometry, psycho-galvanic reflex, and psychological testing and evaluation through observation. While the importance of avoiding mistaking deafness for mental deficiency is stressed, no true method of diagnosis is described. Sympathy for the subject is displayed throughout the book but there is no contribution made to our present body of knowledge. (*Harriet E. Gillette, M.D.*)

THE HANGOVER. A Critical Study in the Psychodynamics of Alcoholism. By *Benjamin Karpman, M.D.* Cloth. Price, \$9.50. Pp. 531. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

This is an interesting volume concerning the problem of the chronic alcoholic. The author states his purpose to be a recognition of chronic alcoholism as a manifestation of a deep seated neurosis. As in the case of other neuroses, the alcoholic is not aware of the basic psycho-pathology. The purpose of this presentation is an intensive study of the "hangover phenomenon" in an attempt to more clearly discern some elements of the basic neurosis.

The mode of presentation is informative. Seven men and seven women were asked to record the experiences they had while under the influence of alcohol, with particular reference to the hangover. These records have been edited by the author, and in each case a brief interpretation is incorporated as part of the individual's alcoholic history. The last fifty pages of the volume consist of further synthesis by the author of the data presented previously. A casual reading of this work provides one with a vicarious "binge" of no mean proportions.

Much of the material is illustrative of the fact that psychiatrists "go down deeper, stay down longer, and come up dirtier." Whether this exercise will be helpful in bringing about clearer understanding of the alcoholic must be a personal equation.

This reviewer shares with the author considerable disappointment that only one of the fourteen cases appears to have benefited from prolonged analysis. It would appear that this book is of greater interest to psychiatrists and psychologists than to psychiatrists, therapists, or clergy. (*Ben L. Boynton, M.D.*)

MEDICINE IN A CHANGING SOCIETY. Edited by *Iago Galdston, M.D.* Cloth. Price, \$3.00. Pp. 166. International Universities Press, 277 W. 13th St., New York 11, 1957.

This work is a monograph of five lectures for the public on current trends in medicine related to psychiatry. The first chapter, by Dr. Franz Alexander, considers the trends both in the past as well as the present of man's behavior in relation to the forces of security as opposed to adventure, exploration and creation. An example is the reversal in attitude of present-day youth from one of lust for adventure to one of greater interest in security and stability, especially in choosing a career.

The second chapter, by Dr. John A. Rose, is a very good review of trends in modern child psychiatry. The author deals with the behavior problems of children as related to attitudes and problems of the parents. Although he does not say that there are no problem children, but only "problem parents," he points out that it is true that the quality of feeling and capacity for ideal formation stem directly from emotions and ideals concerned with the care of the child.

The third chapter, by Dr. William Malamud, covers comprehensively the modern concepts of the general relationship between organic disturbance and personality functions. He deals with organic factors which affect personality functions and demonstrates some of the practical implications. For example, a description of some of the psychologic problems associated with poliomyelitis in a child is given.

In the fourth chapter, Dr. W. Horsley Gantt, discusses experimental neurotic behavior in dogs based on conditioned reflexes. He develops this experimental method as a suggested method for detecting susceptibility to nervous breakdown, which might lead to a rational basis for preventive psychiatry. It is a very interesting and provocative idea for our modern society.

In the last chapter the editor discusses the historical background of medical attitudes, and stresses the point of view, related to physical medicine and rehabilitation, that modern science has in a large measure "exchanged mortality for morbidity."

The book is excellent reading for background information about psychiatry as related to medicine. (D. J. E., M.D.)

REHABILITATION IN ENGLAND. Prof. Dr. W. Rusken, and Dr. P. Kerschbaum. Cloth. Price, \$8.60. Pp. 287, with illustrations. Georg Thieme Verlag, Stuttgart, Germany, 1957.

This book is divided into five sections: the first deals with fundamental methods of rehabilitation and is written by Prof. Dr. W. Rusken; the second section deals with the English rehabilitation system and is by Dr. P. Kerschbaum; the third section deals with the records and statistics of the British Ministry of Labor having to do with the rehabilitation of the disabled; the fourth section is a report by three German physicians of their visit to the paraplegia center at Stoke-Mandeville, England (the authors of this section are Dr. Kreusch, Dr. Lemberg, and Dr. Volkmann); and the last section presents a seminar on the rehabilitation of the blind, as practiced in various European countries. All of the authors are well qualified to discuss the subjects assigned to them.

The book is a reference manual prepared particularly for the guidance of German physicians and medical social workers who are seeking an answer to the many and urgent problems in rehabilitation in that country.

The West German Department of Labor has collected the reports of study trips in the field of rehabilitation, and the book as a whole presents the observations of five specialists who spent some time in England studying rehabilitation procedures.

In the first section, Professor Rusken of Berlin presents a review of the findings. The majority of the patients requiring rehabilitation in England are treated in general hospitals but certain, very seriously injured persons are concentrated in centers, such as the ones for severe brain damage, for spinal cord injuries, for amputees, for the tuberculous, or for the blind. Typical of the English rehabilitation centers is the special role played by industry in developing outpatient programs

for training of seriously disabled persons by means of early, productive vocational therapy in a factory environment. Professor Rusken continues his fluent description with comments on the rehabilitation of neurotic patients, on labor difficulties, and on functional nervous disturbances. He also discusses the rehabilitation and outpatient care of the aged and the outpatient programs for chronic diseases and for convalescence.

In the second section, Dr. Kerschbaum discusses the legal aspects of the development of rehabilitation in England and the foundation of various rehabilitation services, and describes more than 10 of the most important centers in England which were visited by the German scientists. He finishes this section with a consideration of organization and of social and psychologic problems encountered in rehabilitation centers.

The third section records statistics of the British Ministry of Labor, and the fourth section is a report of a three months' visit to Stoke-Mandeville by three German physicians.

The final section presents the information obtained during a seminar on rehabilitation of the blind, which was held in London, England, and which was attended by representatives from 18 European countries.

The German authors of this book are enthusiastic about the scope, the teamwork, and the psychologic approach to the problems of the disabled and they are favorably impressed with the results obtained in the total rehabilitation of seriously handicapped persons as they observed them in England. They are convinced that the German authorities can learn much from the experiences of the English in the field of rehabilitation. However, they doubt seriously whether the population of Germany will accept the same systems and the same organization as the English people do.

This book is a good introduction to the problems of rehabilitation in general but it is not a complete review of the subject. Written, as it is, in German, it will be a very satisfactory introduction to problems in rehabilitation as approached in England and it should be helpful to medical and social workers in German-speaking countries.

TEN MILLION AND ONE. Neurological Disability as a National Problem. Arden House Conference, Sponsored by the National Health Council. Edited by Alice Fitz Gerald, and Justus J. Schifferes. Cloth. Price, \$3.50. Pp. 102. Paul B. Hoeber, Inc., Medical Book Dept. of Harper & Bros., 49 E. 33rd St., New York 16, 1957.

The book is a report of the conference on neurological disability as a national problem sponsored by the National Health Council in December, 1955. Its title is based on the

estimate that 10 million people in this country suffer from greater or lesser degrees of neurologic disability. The conferees, selected from many organizations, outlined many scientific and clinical problems of this important area of the practice of physical medicine and rehabilitation, and also the difficulties of caring for these patients, such as technical help, and economic support. The book is useful for general information concerning the problems of neurologic disabilities. (D. J. E., M.D.)

TRENDS IN GERONTOLOGY. Second edition. By *Nathan W. Shock*. Cloth. Price, \$4.50. Pp. 214. Stanford University Press, Stanford, Calif., 1957.

The first edition of Shock's "Trends in Gerontology" has served for more than five years as a reliable guide to all those interested in various aspects of aging. The new second edition will continue to bring essential information to the students in various areas of gerontology. It covers a large territory, ranging from health to social and economic problems. This book while not dealing with specific problems of the elderly patients, refers the reader to all the outstanding resources and research projects currently in progress both here and abroad. One of the most interesting parts of the book is that which deals with the plans of a proposed Institute of Gerontology. It is structurally sound and wisely realizes the difficulties which stand in the way of its immediate establishment. The plan shows the tremendous experience of Dr. Shock in this field. Like many others, Dr. Shock interprets rehabilitation rather generally and fails to focus on its primarily medical character. To be sure, this is due to the general lack of understanding of the physician's place and role in comprehensive rehabilitation.

This book should be read not only by students of geriatrics, and gerontology but by all those who in the course of their professional activities come in contact with elderly people. (Michael M. Dacso, M.D.)

SEX PERVERSIONS AND SEX CRIMES. By *James M. Reinhardt*, Ph.D. Cloth. Price, \$5.75. Pp. 340. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1957.

This volume is one of the monograph series devoted to police science. The author states that he hopes the book will also be of interest to medical men, lawyers, and social workers. The writing is lucid, the volume is well indexed, and there is an interesting bibliography appended which makes it easy for the reader to explore further any particular areas of interest.

The first portion of the book is devoted to the life and problems of male homosexuals.

This section includes a "Gay" Glossary which is fairly complete and helpful in understanding the text. The basic premise in regard to homosexuals is that although these people need understanding, society should continue to take vigorous measures to keep them in check because they are compulsively motivated active recruiters for their ranks. A series of letters from homosexuals to each other gives further insight into the bizarre sexual-pathology of these unfortunate deviates. As Dr. Reinhardt points out in the opening chapter, sex permeates the whole person in the human being and this is just as true of the abnormal as it is of the normal person.

An interesting chapter is devoted to transvestism which the author does not consider to be a manifestation of homosexuality but rather "a person whose whole personality is dominated by the desire to be identified with the opposite sex." The chapter's sub-title is: "Nature's Cruel Paradox" — the several cases presented certainly bear this out.

Pyromania, sex murder, sado-masochism, and a variety of other perversions are given interesting treatment in subsequent chapters. Illustrative case material is exceedingly good although sometimes presented in much abbreviated form.

This volume should be of interest to medical men who have a desire to understand some of the sad situations in which the pervert finds himself in relation to society. It is unfortunate that the proof-reading of this volume is not up to the standard usually maintained by the publisher. (Ben L. Boynton, M.D.)

**now available . . .
without charge . . .**

- "Employment Outlook for Physical Therapists: A Survey of Salary and Personnel Policies" by Augustin & Ehmann. (Reprint from August, 1957 Archives of Physical Medicine and Rehabilitation)
- American Registry of Physical Therapists: Booklet of Information.
- Guide Law: An Act Defining and Regulating Physical Therapy, etc.
- By-Laws of the American Registry of Physical Therapists.

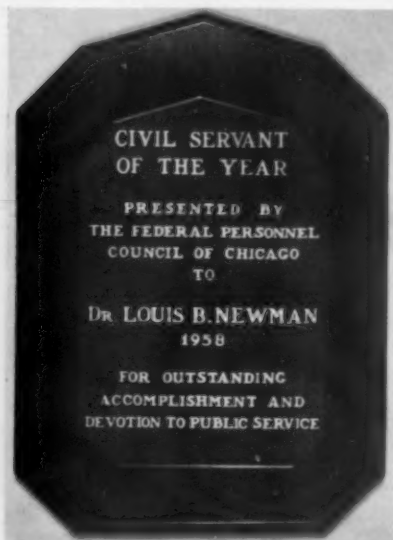
**WRITE REGISTRAR
AMERICAN REGISTRY OF PHYSICAL THERAPISTS
30 NORTH MICHIGAN AVENUE
CHICAGO 2, ILLINOIS**

medical news

Members are invited to send to this office items of news of general interest, for example, those relating to society activities, new hospitals, education, etc. Programs should be received at least six weeks before date of meeting.

Louis B. Newman Receives Civil Servant of the Year Award

Dr. Louis B. Newman was the recipient of the 1958 Civil Servant of the Year Award on March 18, 1958, for "outstanding accomplishment and devotion to public service." Dr. Newman's selection was made from over 70,000 Federal employees by the Federal Personnel Council of Chicago, marking the 75th Anniversary of the establishment of Civil Service. This award was given for integrity and devotion to the principles of public service both on the job and in private life and for a record of competence, efficiency, and accomplishments of unusually meritorious nature.



Dr. Newman is Chief of the Physical Medicine and Rehabilitation Service at the Veterans Administration Research Hospital, Chicago, and also Professor of Physical Medicine at Northwestern University Medical School.

Dr. Newman was a Commander in the U. S. Navy during World War II, having been in charge of Departments of Physical Medicine and Rehabilitation at several naval hospitals. He was Chief of the Physical Medicine and Rehabilitation Service at the VA Hospital, Hines, Illinois, prior to his present position at the VA Research Hospital, Chicago. He received a degree in Mechanical Engineering from the Illinois Institute of Technology, and his Doctor of Medicine degree from Rush Medical College.

He is currently serving as fifth vice-president of the American Congress of Physical Medicine and Rehabilitation and is President-Elect of the American Academy of Physical Medicine and Rehabilitation. Dr. Newman has been honored many times throughout his distinguished career (see *Archives of Physical Medicine and Rehabilitation*, August, 1957, p. 553).

New Blood Clot-Dissolving Enzyme

A new blood clot-dissolving enzyme promising effective control in thromboembolic diseases was described by three investigators at the annual meeting of the American Medical Association in San Francisco. The report on the enzyme fibrinolysin was given by Drs. H. O. Singher, D. S. Pattison and R. V. Chapple, of the Ortho Research Foundation, Raritan, N. J. They described its intravenous use in phlebothrombosis, vascular surgery, pulmonary embolism, cerebral thrombosis, and mesenteric thrombosis.

The new agent is currently under clinical trial. Preliminary studies indicate that its main advantages are: "the capability to induce and maintain a fibrinolytic level, the lack of hemorrhage in the face of this level, and the fact that it can be employed in the presence of anticoagulants," according to the investigators. They stress that "its mechanism is dissolution, not prevention of clot formation."

Major problems in treating clots are prevention of further extension of a clot and the dissolving of an existing clot or embolus, the investigators said. None of the anticoagulants are capable of dissolving a clot once it has

been formed, although in many instances of minor clots, dissolution will be made by the body's own clot-dissolving mechanism.

The agent is prepared by activating plasminogen with streptokinase to form fibrinolytic plasmin, the clot-dissolving substance.

Program for the Chronically Ill and Aged

The New York City homestead program for the care of the chronically ill and elderly was launched officially at the Goldwater Memorial Hospital on Welfare Island, N. Y. The program is a development of the Public Home Infirmary Program conducted in cooperation with the State Department of Social Welfare and the city Department of Welfare which determines the eligibility to receive public assistance. A study team under the direction of Dr. Howard A. Rusk, with financing by the New York Foundation, reported in October, 1956, that "one out of every five patients in the city's municipal general and chronic disease hospitals is there not because he needs hospital services but simply because he or she has no other place to go." The team, including Mr. David M. Heyman, president of the New York Foundation, and Dr. Morris A. Jacobs, then Deputy Commissioner of Hospitals in charge of medical affairs, recommended the establishment of homestead facilities, "utilizing existing general care and chronic disease hospitals but with special provisions for the comfort, recreational and rehabilitative needs of the patients, mostly elderly men and women." It was estimated that there were between 1,740 and 2,200 patients in the 10,000 beds surveyed who no longer required hospital care, but who could not be discharged for lack of other community resources. These patients suffered primarily from neurological conditions, cardiovascular diseases, and arthritis.

Sun Tan in Capsules!

A new drug in capsule form, taken orally a couple of hours before exposure to the sun, will permit anyone even with the fairest and tenderest skin to acquire a healthy tan during summer months. But the drug has a value other than purely a cosmetic one. Millions of people, such as farmers, road builders and countless others, who are employed outdoors and are exposed to the often damaging actions of actinic rays, will find the drug helpful.

This new drug, 8-methoxypsoralen — or 8-MOP for short, is a compound that is extracted from the Egyptian weed *Ammi Majus*. As early as the 13th century, European doctors, and possibly the ancient Egyptians long before them, have used the extract of this weed to treat vitiligo, the disease that

causes white blotches on the skin. But it remained for two Egyptian scientists, Abu Shady and I. R. Fahmy to determine several years ago the chemical formula of the natural substance that enhances the tanning of the skin when exposed to the sun. After that, European and American scientists experimented with the idea that the compound, already able to darken the light spots on the skin, could tan the skin of fair people who otherwise could not expose themselves to the sun without suffering from its rays or acquiring a serious illness.

Extensive experiments with 8-MOP in this direction were made by Dr. T. B. Fitzpatrick, of the University of Oregon, particularly with volunteers from the Arizona State Prison as well as elsewhere. Results of tests in Hawaii by Dr. Fitzpatrick's associate Carl Hopkins were observed by Dr. Harry L. Arnold, of Honolulu. Dr. Arnold came to the conclusion, confirmed by other physicians and scientists, that 8-MOP apparently augments the tanning and the corneal thickening normally produced by sunlight.

Experiments are now being conducted to evaluate the potential use of the drug in the prevention of skin cancer which is found extensively in the South among fair-skinned people of North-European stock.

Texas Physical Medicine and Rehabilitation Society

During the meeting of the Texas Physical Medicine and Rehabilitation Society, the following officers were elected: Dr. Vann S. Taylor, Dallas, president; Dr. Edward M. Krusen, Dallas, vice-president; Dr. Lewis A. Leavitt, Houston, secretary; and Dr. Odon F. von Werssowetz, Gonzales, delegate. Several amendments were made to the organization's constitution, which was adopted at the 1957 annual session.

AMA Opposes Forand Bill at House Hearings as Unnecessary and Risky

Testifying before the House Ways and Means Committee, two witnesses for the American Medical Association opposed the Forand hospitalization-surgical care amendment to the social security program as unnecessary, of unpredictable cost, and as pointing the way to a complete program of socialized medicine. Witnesses were Drs. Leonard Larson, an AMA trustee, and Frank Krusen of the Mayo Clinic.

"Today you have before you proposals which would . . . mean a federally financed and federally controlled system of medical-hospital care, first for social security beneficiaries, subsequently for other groups and ultimately for everyone," Dr. Larson said.

He explained that the medical profession is "acutely aware" of existence of medical care problems among the aged, and added: "We do not agree, however, with the advocates of the pending legislation as to the nature and extent of the problems, or as to the means of solving them. We feel, as do many others, that traditional voluntary private methods can eliminate deficiencies and at the same time preserve individual and community freedom."

Dr. Larson then described in some detail new operative procedures, development of antibiotics, and other medical advances' private enterprise accomplishments that are "evidence that federal intervention is not required." Regarding medical progress and the increasing number of aged, he said, "Thus we in medicine have helped to create not only the problem of the aged, we have helped to create the aged. We have done it under the free choice system. We can solve the problems in the same way." One of the most encouraging developments, Dr. Larson said, was the remarkable growth of voluntary health insurance among the aged, an indication that still greater protection will be provided in the future without Federal action.

Dr. Krusen made it clear that the AMA has not and is not now opposing social security, but that it has and is opposing such proposals as the Forand bill, which "represent in our opinion a major and dangerous deviation from the original concept of the system." Dr. Krusen then made these points, among others:

1. The aged, for the most part, do not need short stays in general hospitals but rather improved home and community care, "as well as less costly and improved chronic illness and nursing home facilities."
2. The AMA on its own and through the Joint Commission to Improve the Health Care of the Aged is attacking the problems of furnishing medical care to the aged, and is supporting legislation for federal mortgage guarantees for proprietary and other hospital and nursing homes to reduce costs.
3. Under the Forand bill the government would (a) finance health care of millions through compulsory taxes, (b) control the funds, (c) set benefits and rates of compensation, (d) establish and enforce hospital and medical care standards.
4. Patient and physician alike would have to submit to Federal regulations, and patients would not have free choice of physician.
5. Medical efforts alone will not solve the problems of the aged; many other segments of our society will have to contribute, as many of their ills are the direct result of the inferior role in which this group has been placed. He added: "We as physicians are going to find out what the aged really need; what new improvements are succeeding in giving them

better health care and how such procedures can be universally applied."

Recent Publications by Members

Richard T. Smith and co-authors, "Increasing the Effectiveness of Gold Therapy in Rheumatoid Arthritis". The Journal of the American Medical Association, July 5, 1958.

Ernst Fischer, "Physiological Basis of Methods to Elicit, Reinforce, and Coordinate Muscular Movements". Physical Therapy Review, July, 1958.

Herman L. Rudolph, "Cerebral Palsy". The Pennsylvania Medical Journal, June, 1958.

O. Leonard Huddleston and co-authors, "The Static Wrist Splint". The American Journal of Occupational Therapy, May-June, 1958.

Otakar Machek and co-author, "Development of a New Service in a Muscular Dystrophy Clinic". Physical Therapy Review, July, 1958.

Louis W. Granirer, "Exfoliative Dermatitis as a Complication of Chloroquine (Aralen) Therapy in Rheumatoid Arthritis". A.M.A. Archives of Dermatology, June, 1958.

Grace M. Roth, "Laboratory Diagnosis of Pheochromocytoma". Minnesota Medicine, May, 1958.

Howard A. Rusk and co-authors, "Cardiac Rehabilitation: A Survey of Cardiologists' Opinions". American Heart Journal, July, 1958.

Paul A. Nelson, "Physician's View of Whiplash Injuries of the Neck". Cleveland-Marshall Law Review, September, 1957.

Eugene Moskowitz and co-authors, "Post-hemiplegic Reflex Sympathetic Dystrophy". The Journal of the American Medical Association, June 14, 1958.

J. L. Rudd, "Rehabilitation Following Surgical Repair of Shoulder Dislocations". Physiotherapy (London), June 10, 1958.

P. Bauwens, "Surface Electrodes". Physiotherapy (London), June 10, 1958.

Ernst Fischer, "Physiological Basis of Volitional Movements". Physical Therapy Review, June, 1958.

Delilah Riemer and co-author, "Five Year Study of Treatment of Bromidrosis and Epidermophytosis with Copper Iontophoresis". Physical Therapy Review, June, 1958.

Prosthetics Education Program

1958*

September 10-26

Functional Bracing of the Upper Extremities for Prosthetist-Orthotists (\$150)

September 22-26

Functional Bracing of the Upper Extremities for Physicians and Therapists (\$125-\$75)

September 29-October 3

- Orthotic and Prosthetic Rehabilitation for Rehabilitation Personnel (\$50)
 October 6-17
 Above-Knee Prosthetics for Prosthetists (\$100)
 October 13-17
 Above-Knee Prosthetics for Physicians and Therapists (\$125-\$75)
 November 5-21
 Functional Bracing of the Upper Extremities for Prosthetist-Orthotists (\$150)
 November 17-21
 Functional Bracing of the Upper Extremities for Physicians and Therapists (\$125-\$75)
 December 1-5
 Orthotic and Prosthetic Rehabilitation for Rehabilitation Personnel (\$50)
 December 10-13
 Advanced Above-Knee Prosthetics for Prosthetists (\$35)

1959*

- January 12-16
 Orthotic and Prosthetic Rehabilitation for Rehabilitation Personnel (\$50)
 February 4-20
 Functional Bracing of the Upper Extremities for Prosthetist-Orthotists (\$150)
 February 16-20
 Functional Bracing of the Upper Extremities for Physicians and Therapists (\$125-\$75)
 March 2-6
 Orthotic and Prosthetic Rehabilitation for Rehabilitation Personnel (\$50)
 March 9-20
 Above-Knee Prosthetics for Prosthetists (\$100)
 March 16-20
 Above-Knee Prosthetics for Physicians and Therapists (\$125-\$75)
 March 25-28
 Advanced Above-Knee Prosthetics for Prosthetists (\$35)
 April 8-24
 Functional Bracing of the Upper Extremities for Prosthetist-Orthotists (\$150)
 April 20-24
 Functional Bracing of the Upper Extremities for Physicians and Therapists (\$125-\$75)
 May 4-8
 Orthotic and Prosthetic Rehabilitation for Rehabilitation Personnel (\$50)
 May 18-June 5
 Upper Extremities Prosthetics for Prosthetists (\$150)
 June 1-5
 Upper Extremities Prosthetics for Physicians and Therapists (\$125-\$75)
 June 15-19
 Orthotic and Prosthetic Rehabilitation for Rehabilitation Personnel (\$50)

*Amount of tuition fees shown in parentheses.

For further information and enrollment forms write to: Dr. Miles H. Anderson, Prosthetics Education Program, Room B4-

229, Medical Center, University of California at Los Angeles 24.

Newly Registered Therapists

April 9, 1958

- Luke, William J., 1535 Ridgeview Dr., Glendale, Calif.
 Stephens, Hamilton, 500 Riverside Dr., New York City
 Triantafilo, Maria, 1720 Brooklyn Ave., Los Angeles

April 30, 1958

- Anderson, Mary G., 333 Parnassus Ave., San Francisco
 Brenner, Madeleine A., 31 City Line Ave., Bala Cynwyd, Pa.
 Chapman, Elisabeth A., 122 James River Dr., Warwick, Va.
 Israel, Alice L., 2300 E. 87th St., Cleveland
 McElroy, Carrol Rae, 1236 Harding St., Long Beach, Calif.
 Ulberg, Frances, 9 Greenway, Rockville Centre, N. Y.
 Venerable, Wendell G., 60 E. 70th St., Chicago

May 6, 1958

- Press, Vita R., 10510 Wheatland Ave., Sunland, Calif.

May 19, 1958

- Becker, Robert D., 3 S. French St., Alexandria, Va.
 Sendker, Ray A., 57 LaSalle Ave., Buffalo

Books Received

Books received are acknowledged in this column as full return for the courtesy of the senders. Reviews will be published in future issues of the journal. Books listed are not available for lending.

Human Biochemistry by Kleiner and Orten; **Physical Methods in Physiology** by Catton; **On the Utility of Medical History** edited by Galdston; **General Diagnosis and Therapy of Skin Diseases** by Siemens; **An Inventory of Social and Economic Research in Health** by Health Information Foundation; **The Principles of Exercise Therapy** by Gardiner; **Clinical Orthopaedics** edited by De Palma; **Self-Help Devices for Rehabilitation** issued by the National Foundation for Infantile Paralysis; **Progress in Peaceful Uses of Atomic Energy**; **Preventive and Corrective Physical Education** by Stafford and Kelly; **Therapeutic Heat** edited by Sidney Licht; **Planning for Victory Over Disablement. Proceedings of the Seventh World Congress of the International Society for the Welfare of Cripples** edited by

Hill; Annual Review of Physiology edited by Hall; Synchronized Swimming by Yates and Anderson; Grundlagen der Rehabilitation in der Bundesrepublik Deutschland by Jochheim; Wiederherstellungschirurgie und Traumatologie by Lange; Scientific Societies in the U. S. by Bates; Fundamentals of Neurology by Gardner; Clinical Neurology by Wechsler; 1958 Current Therapy edited by Conn; Rehabilitation of the Cardiovascular Patient by White, et al; Dynamic Anatomy and Physiology by Langley, et al; Anomalies of Infants and Children by Mayer and Swanker; Carbon Dioxide Therapy edited by Meduna; A Manual of Electrotherapy by Watkins; Functional Bracing of the Upper Extremities by Anderson; Nerves Explained by Asher; Scientific Basis of Athletic Training by Morehouse and Rasch; The Clinical Physiology of Physical Fitness and Rehabilitation by Jokl, and Manual for the Aphasia Patient by Longrich.

Professional Education Announcement

September 1 and December 1 are the current deadlines for applications to the National Foundation for Infantile Paralysis for postdoctoral fellowships in research and academic medicine or in the clinical fields of rehabilitation, orthopedics and preventive medicine. Applications for fellowships in the medical associate fields of physical therapy teaching and occupational therapy teaching should also be filed by these dates. A spring date of March 1 is also provided. Financial support of the Fellow varies according to previous education, professional experience, marital status, and number of dependents. Compensation to the institution is arranged according to the program undertaken. For a full academic program, tuition and fees are allowed; for other programs, a sum not to exceed \$1,250.00 per year (includes tuition) is provided. All awards are made upon recommendation of the appropriate National Foundation Fellowship Committee. U. S. citizenship is required, but those who have filed a petition for naturalization will be considered. Partial fellowships are available for qualified veterans to supplement G. I. educational benefits.

I. FOR POSTDOCTORAL TRAINING IN RESEARCH OR ACADEMIC MEDICINE.

Awarded to applicants with an M.D. or Ph.D. or equivalent degree for basic or advanced training in laboratory research in medicine and the related biological and physical sciences. This program is not intended for experienced investigators who need support for a research project. Financial

benefits, in addition to the compensation to the institution, vary from \$3,900.00 to \$6,000.00 a year. Under unusual circumstances, higher stipends may be permitted. Transportation not to exceed \$600.00 may be paid if foreign study is approved.

II. FOR POSTDOCTORAL STUDY IN THE CLINICAL FIELDS OF:

A. REHABILITATION:

- 1) For licensed physicians interested in rehabilitation as it relates to their specialty and who wish to study the concept and basic technics of rehabilitation. One year of internship is required and license to practice in the United States.
- 2) For residents who wish specialty training in Physical Medicine and Rehabilitation. Awards are made for a period of one, two, or three years, depending upon the time required to complete eligibility requirements for certification by the American Board of Physical Medicine and Rehabilitation. Preference is given to applicants under 40 years of age.

Financial benefits, in addition to compensation to the institution for the foregoing requirements, are \$300.00 or \$350.00 per month depending on marital status with \$25.00 additional for each dependent child.

B. ORTHOPEDICS:

For surgeons who have completed requirements for certification by the American Board of Orthopedic Surgery (or who have had equivalent training) and who are interested in advanced study in orthopedics in preparation for teaching or research. The age limit is 36. Awards are made for a period of one year and are subject to renewal. Financial benefits, in addition to the compensation to the institution, vary from \$4,500.00 to \$6,000.00. Under unusual circumstances, higher stipends may be permitted.

C. PREVENTIVE MEDICINE:

For physicians who desire to prepare for the teaching of preventive medicine. Applicants must have had two years of training and experience, including responsibility for teaching, in one of the areas related to preventive medicine. Awards are made for a period of one year and are subject to renewal. Financial benefits, in addition to the compensation to the institution, vary from \$4,500.00 to \$6,000.00 a year. Under unusual circumstances, higher stipends may be permitted.

III. FELLOWSHIPS FOR PERSONNEL IN THE MEDICAL ASSOCIATE FIELDS.

A. PHYSICAL THERAPY TEACHING:

For physical therapists to prepare for instructional and administrative positions in schools offering approved educational programs in physical therapy. The Fellow should plan his program so that upon its completion, he will have: (1) graduate study in physical therapy; (2) advanced study in one field related to physical therapy (e.g. anatomy, physiology, psychology, statistics); (3) formal courses in education and administration; (4) broad clinical experience in physical therapy and (5) supervised experience in teaching and administration in an approved physical therapy program.

All fellowships are awarded for full-time study for a minimum of one academic year. There is no stipulation that the total program be undertaken in a single university. The candidate may be a candidate for an advanced degree in physical therapy or a related field. Applicant must have a baccalaureate degree and significant experience as a physical therapist for three years or more. Candidates who have had less than three years of experience may apply provided they are nominated by a school offering an approved curriculum in physical therapy for a program of not less than two years of study. Financial benefits, in addition to compensation to the institution as outlined, range from \$200.00 to \$350.00 per month depending on previous education and experience.

B. PHYSICAL THERAPY TRAVEL-SHIPS.

To permit physical therapists to observe and study outstanding examples of administrative, teaching or clinical service in physical therapy. Applicant may study in the United States or abroad. Candidates must have graduated from a school offering an approved curriculum in physical therapy and have at least three years of experience as a physical therapist in a clinical, administrative, or teaching position. The travelship is for a minimum of one month in the United States or six weeks abroad exclusive of time required for travel. Financial benefits include maintenance and transportation and may not exceed \$2,500.00 for any individual.

C. OCCUPATIONAL THERAPY TEACHING.

For occupational therapists to prepare for instructional and administrative

positions in schools offering approved educational programs in occupational therapy. The Fellow should plan his/her program to emphasize those areas in which he/she may be deficient such as: (a) basic academic and clinical study; (b) specialization in one or more fields of occupational therapy; (c) preparation for administration of an occupational therapy teaching program; (d) supervised experience in teaching. All fellowships are awarded for full-time study for a minimum of one academic year. There is no stipulation that the total program be undertaken in a single university. The candidate may be a candidate for an advanced degree in occupational therapy or a related field. Applicant must have a baccalaureate degree and experience as an occupational therapist for three years or more. Candidates who have had less than three years of experience may apply provided they are nominated by a school offering an approved curriculum in occupational therapy for a program of not less than two years of study. Financial benefits, in addition to compensation to the institution for tuition and fees, range from \$200.00 to \$350.00 per month depending on previous education and experience.

IV. SCHOLARSHIPS: For basic education in physical therapy and medical social work.

1. For physical therapy: To assist students in completing their education in physical therapy. Applicants with the baccalaureate degree and the required prerequisite courses, are eligible for scholarships for both tuition and maintenance for the time necessary to complete their basic physical therapy education in a certificate program. Applicants who are candidates for the baccalaureate degree are eligible for tuition scholarships in the junior year and tuition plus maintenance in the senior year. Age limit is 36. Financial aid is determined by individual need. Applicants seeking to enter classes beginning in January or February should apply before Sept. 1, 1958 for Scholarship Committee action in Nov. For classes beginning in June or July 1959, the deadline is February 15, 1959 for action in April. For classes beginning in Sept. or Oct. the deadline is April 1, 1959 for committee action in July.
2. For Medical Social Workers: To assist students to complete their education in medical social work. Candidate

must have a baccalaureate degree and preferably one academic year of graduate social work education. A few two-year scholarships are awarded to students entering their first year of graduate study but only when the candidate gives evidence of exceptional aptitude for social work. Age limit, ordinarily 38. Financial benefits are determined by individual need and may include any allowance for tuition and maintenance. Applications must be received by April 1 for consideration in June 1959.

V. SHORT COURSES IN THE CARE OF THE POLIOMYELITIS PATIENT:

Fellowships are offered to doctors, nurses, physical therapists and occupational therapists to attend short courses (one week to three months) in the care of the poliomyelitis patient. A list of institutions offering such courses will be sent on request. Maintenance, transportation and tuition if required, will be paid. Applicants will be expected to attend the course nearest their place of residence if the course is of less than three months duration. Doctors and nurses should apply to their local chapters of the National Foundation. Physical therapists and occupational therapists should apply to the Division of Professional Education of the National Foundation. Applications must be filed at least six weeks before the course begins. For further information write to: Division of Professional Education, National Foundation for Infantile Paralysis, 301 E. 42nd St., New York 17, N. Y.

Heart Technic

A technic for evaluating the effects of heart-valve surgery while an operation is in progress has been developed by a team of surgeons and cardiologists at the Public Health Service's National Heart Institute in Bethesda, Md. With this technic, direct measurements are made of the heart's output of blood and of differences in pressure on each side of abnormally narrowed, or "stenosed," valve openings just before and after these openings are surgically enlarged. The new technic allows a more precise and immediate evaluation of the results of heart valve surgery than has previously been possible with conventional technics, by which pressures and output of blood are measured before and after an operation but not during it.

By making these measurements while an operation is in progress, the new technic tends to eliminate the influence of all variables except the critical one — the size of the valve opening. It gives the surgeon a better idea of how much of the valve's function has

been restored and lets him know whether to enlarge the valve opening still further during the same operation. The new method is applicable in operations for stenosis of any of the four valves of the heart. Its value was demonstrated in studies of twenty-four patients undergoing valve surgery at the Heart Institute (18 with mitral, four with aortic, and one each with pulmonic and tricuspid valve stenosis).

The new technic was developed by Drs. Herbert Tanenbaum, Eugene Braunwald, and Andrew Morrow of the Heart Institute Clinic of Surgery. After exposing the heart to view, the Heart Institute team measures pressures simultaneously in the chambers immediately upstream and downstream from the diseased valve by puncturing these chambers with fine (20-gauge) hypodermic needles. The needles are attached directly to two hand-held pressure transducers, which change the pressure pulses coming through the needles into electrical pulsations. The pulsations from both transducers are projected as two parallel tracings moving across the screen of a cathode ray oscilloscope. The difference between these synchronized pressure tracings reflects the pressure difference, or "gradient," across the diseased valve. The effect of the surgery in relieving the abnormal pressure gradient is apparent when these measurements are repeated immediately after the surgeon opens the heart and inserts his finger (or an instrument) into the valve opening to enlarge it.

To determine the heart's output of blood just before and after this valve manipulation, the Heart Institute team injects measured amounts of a special blue dye directly into either the pulmonary artery or the left atrium, which carry the blood from the lungs to the left ventricle to be pumped to all body tissues. As it circulates through the heart and out into the arteries, the dye-containing blood is drawn at a constant rate from an arm artery through a densitometer (a photoelectric device that detects the dye concentration). The concentration of the dye and its transit time through the circulation are also projected visually as a "dye dilution curve." The characteristics of this curving line indicate the output of blood from the heart.

Stenosis of heart valve openings is a common form of heart disease which may be inborn. More often, however, it is due to repeated episodes of rheumatic fever. This disease attacks the delicate mobile "leaflets" or "lips" of the valve, which normally close together tightly and open widely at each heartbeat to regulate flow in and out of the chambers. The adhesive inflammations of rheumatic fever may progressively fuse the lips together. This narrows the opening against the passage of blood, creating abnormal pressure gradients between the adjacent chambers, and overworking the heart. The operation most commonly used to free these stenosed valve components and relieve

the abnormal pressure gradients is called "commissurotomy," for the commissures or lines where the lips of the valves come together.

In the past, accurate evaluation of the results of commissurotomy has been dependent on measuring pressure gradients through a flexible plastic catheter tube threaded into the heart from outside the body during the periods before and after the operation. During these comparatively lengthy and eventful intervening periods, factors other than surgery on the valve — such as variations in the patient's medical therapy, stress and rest experiences — can alter the pressure and flow patterns within the heart and thus mar the precision of the evaluation data.

By 1970 — A Billion Dollars

Expenditures for medical research in this country can and should be tripled to reach a billion dollars a year by 1970, a group of special consultants to the Secretary of Health, Education, and Welfare said in a recently released report. The consultants warned, however, that a medical research effort of this magnitude will require a major increase in the number of physicians and other scientists engaged in medical research — from 20,000 now to 45,000 by 1970. They also said that funds for construction of medical schools will be needed "on a much larger scale than has heretofore been contemplated" and that even if large funds are provided "it seems certain that the number of physicians per 100,000 population will decline" during the next 12 years.

The report was presented to Secretary of Health, Education, and Welfare Marion B. Folsom, who appointed the group about a year ago to advise him on long-term needs in medical research and medical education.

Ten prominent medical educators and industry research executives participated in the study. Chairman of the group was Dr. Stanhope Bayne-Jones, formerly dean of the Yale University School of Medicine, President of the Joint Administrative Board of the New York Hospital-Cornell Medical Center, and Technical Director of Research, Office of the Surgeon General, Department of the Army. "The expansion of medical research and education required in the national interest will be costly and should not be restricted by lack of funds," the report states. "The consultants believe it conservative to project total national medical research expenditures of \$900 million to \$1 billion per year by 1970, as compared with \$330 million in 1957." But the medical schools of today, the consultants emphasized, cannot turn out enough doctors both to provide sufficient staff for a research program of this scale and to meet the growing medical care needs of the expanding population. The consultants expressed the belief that "it would

not be in the public interest for the number of physicians in the Nation to fall below the ratio of 132 for each 100,000 persons in the population."

"This ratio," the report points out, "has remained constant (plus or minus two) over the past 30 years." To maintain this ratio, the report states, would involve the construction of from 14 to 20 new medical schools at a cost of between \$500 million and \$1 billion. Pointing out that there is usually a lapse of about 10 years from the time a school is planned until the first class is graduated, the report states: "Even if funds in the order of \$500 million to \$1 billion were made available immediately for construction of new medical schools, it seems certain that the number of physicians per 100,000 population will decline between now and 1970." The report added, "Unless there is a marked change in social philosophy leading to private gifts or State appropriations on an unprecedented scale, large Federal appropriations will be required."

The consultants suggested that the Federal Government continue to provide about half of all funds for medical research. On this basis, Federal expenditures would increase from \$186 million last year to approximately \$500 million by 1970. Industry's share of last year's medical research costs was estimated at \$90 million and contributions of private philanthropy at \$35 million, but the committee said that both estimates were probably low. Income from endowments was about \$19 million. The committee's projections call for annual expenditures of more than \$300 million by industry and for contributions of more than \$100 million by private philanthropy by 1970.

The report notes that the portion of the Nation's gross national product spent for research and development of all kinds rose from .2 per cent in 1930 to 2.3 per cent last year and can be expected to rise gradually to 4 per cent by 1970. Projected increases in expenditures for medical research, the report states, are "based on the assumption that the proportion of all research and development expenditures represented by medical research will remain constant at the average for the past decade — 3.8 per cent." The committee said that according to present estimates there will be only 3,200 additional physicians and 16,000 additional Ph.D.'s available for medical research during the next 12 years — almost 6,000 short of the 25,000 additional trained workers needed to staff a billion-dollars-a-year research program. However, the consultants said that "it should be possible to produce 20,000 scientists with Ph.D. degrees who will enter medical research" by 1970 and that it is "quite possible that . . . the proportion of physicians who elect essentially full-time careers in research will rise." The report recommended increases — in many instances "substantial" ones — in virtually all programs

of the Department of Health, Education, and Welfare involving medical research. The report points out that the Public Health Service's National Institutes of Health at Bethesda, Maryland, operates "the largest group of medical research laboratories in the world." These direct operations, together with the large grant programs of NIH which support medical research and training in institutions throughout the country, "have over recent years exerted the most important single influence upon the dimensions of American medical research," the report states.

"The consultants are of the opinion," the report states, "that the system evolved for the administration of research and training grants is sound, and that the system has been operated well."

At the same time, the report advocates:

— That research and training grants be administered with closer attention to the inherent relationships among research, training and education.

— That more research grants be made for substantial sums to support more broadly defined areas of investigation for at least 5 years of assured support.

— That a new type of basic general support be provided to increase the capacity of research and educational institutions to perform their educational and research functions.

— That the Office of Vocational Rehabilitation research and training grant program be expanded as rapidly as funds can be put to productive use, and that applicants not be required to finance part of the research financed by grants.

— That high priority be given to securing additional funds for research and training and strengthening the staff of the Food and Drug Administration and for a suitable, well-equipped building for the Food and Drug Administration, including its research and training functions.

— That the research program of the Children's Bureau be strengthened by enactment of legislation authorizing the Bureau to support research through grants and contracts, and that the funds available for the total research of the Bureau be expanded.

"For the Nation's Health"

16-mm. filmograph, color, sound, 15 minutes. 1957.

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Interested persons and service personnel may order the film on a short-term loan from the Surgeon General, Public Health Service (P), Washington 25, D. C. The filmograph may be purchased from Byron, Inc., 1226 Wisconsin Avenue, Washington 7, D. C. Cost of the print, \$62.07, includes reel can, shipping case, and service charge.

Institute on Perinatal Casualties — A Challenge to MCH and CC Programs

The University of Michigan School of Public Health and the University of Minnesota School of Public Health will jointly hold an "Institute on Perinatal Casualties — A Challenge to MCH and CC Programs" for five days, December 8 through 12, 1958 in Minneapolis, Minn. This Institute is co-sponsored by the State MCH and CC Agencies of Michigan and Minnesota. It will be financed by a grant from the U. S. Children's Bureau.

Each person selected by a State will have travel expenses, tuition, lodging, and meals paid for as part of the Institute. Payment for expenses will be made by the University of Minnesota School of Public Health from funds provided by the Children's Bureau.

The program will consist of a series of seminars and discussions. Faculty for the program will be provided from the Schools of Public Health of the Universities of Michigan and Minnesota, and other resource people. The program will consist of such aspects of the problem of perinatal casualties as: Definition, Extent and Significance; Etiology; Prevention; Growth and Development; Coordination of Services including personnel involved, case finding, care, and followup; Perinatal Mortality Studies; Care of the Premature Infant; Specialized Programs (e.g., Mental Retardation, Cerebral Palsy, Congenital Heart Disease, etc.); Program Planning; Program Evaluation.

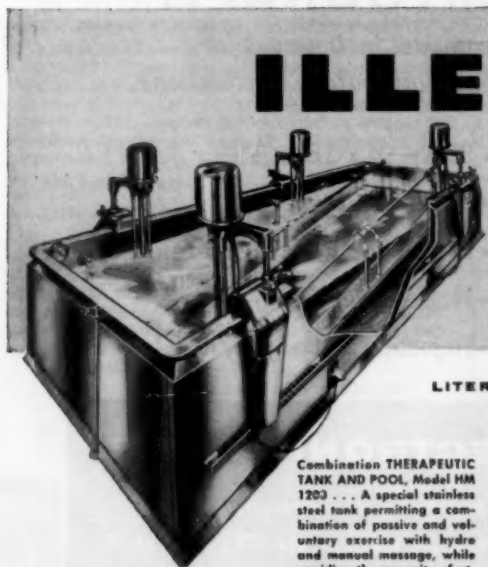
Each State in Regions V (Illinois, Indiana, Michigan, Ohio, Wisconsin) and VI (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota) will have the op-

portunity of selecting at least four staff members to send to the Institute (two staff members from MCH Program and two staff members from CC Program). Staff members selected should be those who are in a key position in program-planning and program-administration, consultation, and supervision within the State. Staff members should be selected on a multi-disciplined basis (e.g., physicians, nurses, social workers, etc.). States which would like to send a team of more than four people may possibly do so by special

arrangement with Dr. Smith or Dr. Wallace.

For further information and complete details contact Dr. Donald C. Smith (Region V), Associate Professor of Maternal and Child Health, University of Michigan School of Public Health, Ann Arbor, Mich., or Dr. Helen M. Wallace (Region VI), Professor of Maternal and Child Health, University of Minnesota School of Public Health, Minneapolis, Minn.

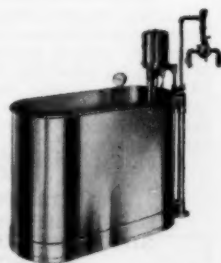
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PATRONESS

Mrs. Richard Nixon

Week of
August 21, 1960

WASHINGTON, D. C., U.S.A.

Preliminary information regarding this meeting may be had from the Office of the Secretary General:
WALTER J. ZEITER, M.D., or from the Executive Secretary, DOROTHEA C. AUGUSTIN,
30 North Michigan Avenue, Chicago 2, Illinois.